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ORIGINAL ARTICLES.

NECROSIS OF THE MAXILLÆ, WITH A REPORT OF THREE CASES.

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Necrosis is the death of bone in mass with subsequent separation of the part, being analagous to gangrene of the soft tissues and differing absolutely in its physiology from caries, which is a molecular death of bone resembling the ulcerative process.

Necrosis occurs with considerable frequency in the maxillary bones, having a decided preference for the inferior maxilla, which it affects in about 65 per cent. of the cases; its selection of the lower jaw as a seat of infection is probably due to the comparatively limited vascularity and the absence of periosteal reduplication in this bone, and to its position being unfavorable to proper drainage.

The causes of necrosis of the maxillæ are ostitis, periostitis or periodontitis resulting from one or more of the conditions or diseases here enumerated.

By extension	Dental ulceration. Alveolar inflamation. Alveo-dental inflammation.
By irritation	First or second dentition. Eruption of wisdom teeth.
By disease	Syphilis. Exanthema. Scrofula.
By poisons	Mercurials, systemic. Phosphorus, local. Arsenic, local. Chloride of zinc, local.
By traumatism	Teeth extraction. Blows or falls.
By idiopathia.	

In maxillary necrosis from any cause the infection and the course of the disease are very similar, varying only in the location of origin and in the extent of the destructive action.

The inflammation may occur primarily in the osseous structure itself causing an excessive engorgement with rapidly increasing stasis in the blood vessels, resulting, if not speedily relieved by antiphlogistic local and constitutional treatment, in a complete cessation of the nutrient faculty with immediate death of the entire portion of bone affected, and subsequent separation from its periosteum and exit through the soft parts.

This inflammation of the osseous body itself occurs more frequently as a result of the process of dentition. When occurring from this cause the effect is more prolonged in consequence of the continued irritability and excitability of the parts concomitant to this process.

If the inflammation originates in the periosteum or periodonteum the resulting necrosis is apt to be less rapid or extensive, and occurs from the separation of the periosteum or periodonteum from the osseous structure by a plastic hypertrophic exudation of osteophytes causing death of the bone from malnutrition, and accounts for the wonderfully perfect reproduction that is happily of so frequent occurrence after this disease. The periosteum is frequently destroyed in part during the progress of the disease, as also are the deciduous teeth and the permanent teeth germs, although disease may completely encircle a permanent tooth in its alveolar crypt without passing through its vascular sac or in any way affecting its formative tissue or interfering with the process of calcification, in which case the tooth may go on to a stage of complete development and be erupted, in the newly formed osseous tissue, at its natural point or at some point along the jaw which may have been designed for a tooth which was destroyed by the disease. The necrotic process is marked by four distinct periods.

1. The hyperæmic or stage of inflammatory engorgement.

2. The hypertrophic or stage of cacoplastic exudate, with formation of fetid pus.

3. The separative or stage of demarkation of bone with loosening and exfoliation of teeth.

4. The formative or stage of exit and reproduction.

The treatment should always be applied in strict accordance with the existing stage of the disease.

1. Active antiphlogistic internal medication and external application, blood letting, prompt

removal of any exciting cause or source of local irritation.

2. Early incision, antiseptic syringing, assistance in commencing separation of periosteum.

3. Antisepsis, constant syringing, tonics, removal of bone through the mouth in pieces or in mass without injury to the periosteal cradle, when exfoliation has occurred and it can be completely and readily separated from the periosteum and soft parts. To remove the body of the lower jaw, division at the symphysis is imperative.

4. Antiseptics, cleanliness, stimulating injections, continued tonic treatment and nourishment, while the discharge persists; Nature does the rest.

The prognosis is good as regards the question of ultimate recovery, although in patients of a scrofulous or syphilitic habit and in poor tissue builders the progress of the disease is slow, (from seven months to two years) and the destruction of tissue is often so extensive that a greater or less amount of permanent deformity results.

The usefulness, strength and natural motion of the jaw is generally maintained either by the formation of new bone if the periosteum is healthy, or in case material destruction of the periosteum has occurred by the formation of a fibroid cicatricial tissue of unusual strength supplying its place.

Case 1.—W. B., age 4, United States. Male. His family history is good on the paternal and maternal side; no history of disease of bone can be traced. For a little over a year before coming under observation he had trouble on the right side of his face. He had at first a swelling over the superior maxillary bone which assumed a bluish color, was attended by severe pain and a decided febrile movement coming on suddenly, and under hot paluvia and general antiphlogistic treatment almost entirely disappearing, only to reappear in the course of a few days or weeks.

Three months after the onset of the disease an external incision was made just under the lower eyelid and a considerable quantity of pus was discharged; the fistula thus formed continued to discharge up to the time of his first visit.

On examination found some tumefaction of the cheek and a permanent spot of ulceration just under the eyelid about over the orbital ridge, causing a marked ectropion as a result of cicatrization and adhesion, passing a probe through this opening dead bone was instantly discovered about the infra-orbital edge of the superior maxillary bone, extending downward towards the teeth and backwards towards the orbital plate of this bone.

An operation was advised and performed as follows: the patient being etherized, an incision was made in the mouth extending from the first bicuspid tooth backwards one inch and upwards towards the fistulous opening about three quarters of an inch; a probe threaded with a seton of braided horse hair several strands thick was then passed into the incision and through the fistulous opening. This seton was fastened securely in position; one end passing from the mouth and the other from the opening, being retained for one week; after this time it was removed, the internal opening became permanent and the external closed in a few weeks.

The opening within the mouth was increased in size by the manipulation used in separating the periosteum from the bone and in removing placques of bone from time to time until all of the external alveolar plates of that side had come away.

About three months after the first examination, and fifteen months after the onset of the disease, a smooth prominence was detected by the probe high up and apparently just under the orbit. It was removed with difficulty; although not firmly fixed it had the size and shape of the crown and body of a second molar permanent tooth. It was devoid of roots and seemed to be in process of formation. It was very light and semi-transparent, having a very sharp edge, and within this edge and adherent to the tooth formative pulp; a large piece of dead bone was also removed at this time which formed the external wall of the antrum of Highmore, causing a profuse hæmorrhage, some of which was discharged through the nose; hæmorrhage from the nose occurred quite frequently during the progress of the treatment, subsequent to this time, as a result of passing the probe in search of dead bone. Inflammatory attacks had occurred on different occasions up to this last procedure and had been accompanied by profuse discharge of pus from the internal opening and on several occasions from the external opening also, but from that time on no more bone was removed and the sinuses were allowed to heal.

Eight years later, at the present time, the patient is strong and well nourished, has had good health and no trouble with his teeth, has a depression along the entire right side of the upper jaw due to loss of the alveolar plates. The lateral, eye, first bicuspid, and first molar permanent teeth are perfect and in good position, the second bicuspid is in position but entirely reversed, so that the external and internal surfaces of the tooth look from before backward. The second molar is absent. The cheek is adherent to the maxilla held by several cicatricial bands at the point of opening of the old internal sinuses. There is a slight scar under the eye and an almost imperceptible drooping of the lower lid, the cicatrices which caused the ectropion having been absorbed. The patient's present appearance would hardly suggest the possibility of so tedious and extensive a disease ever having existed.

D. M., a female, age 5, United States. Her

family on the father's side has been noted for longevity and strength and give no history of any infectious or hereditary disease. The mother is of an extremely nervous and excitable temperament, and on her side relates a history of pulmonary trouble, but not within her immediate family. There has been no history of bone disease on either side. The patient had always been healthy and was fat and robust, never having had any illness of importance until the onset of the present trouble, nine months previous to her coming under observation. When four years and three months old a swelling of the left side appeared and was accompanied by occasional attacks of pain. This swelling and pain was considered a result of ordinary toothache and was very much neglected.

Three months from the time of its inception, the tumefaction and pain having persisted and increased, an opening occurred on the inner side of the cheek near the angle of the lower jaw, through which considerable quantities of stringy pus was discharged. The opening and discharge had occurred after great febrile disturbance, swelling and pain; from this time until nine months after the disease first appeared, the history is a simple repetition of exacerbation of the swelling and return of a subsiding discharge through openings permanently established or through new openings occurring, and always being accompanied by febrile disturbance and pain.

First examined patient nine months after the onset of the disease. At that time there was great tumefaction of the face on the left side with external and internal points of opening or cicatrization.

The swelling was extremely hard and unyielding to pressure at any point, extending over the entire left side of the face and neck, and was not painful except when an attack of inflammation was coming on and pus was forming.

The child was unmanageable, and ether was administered in order that a proper examination could be made; on the outer side of the lower jaw at and in front of its angle several fistulous openings were discovered, into which a probe was passed disclosing some points of roughened bone. There were several external openings which communicated directly with the roughened bone itself, or opened into other sinuses within the mouth.

Two weeks after the above described examination, which resulted in a decided increase in the softening, redness and swelling of the parts, and an attack of cervical adenitis, she was advised to submit to an effort at removal of the dead bone, which was detected at the first examination. She was placed under ether and an incision about an inch in length was made extending from the angle of the jaw forward. Large quantities of feted pus and a plate of bone the size of a five cent piece were removed. This opening was made permanent by syringing, manipulation and applications, and during the three months following, there were removed from eight to twelve small plates of bone varying in size from a split pea to the little finger nail, and, also, two of the permanent teeth in process of formation; one had attached to it the formative pulp and was apparently healthy, the other had arrived at the stage of crown formation, was greenish and discolored and had the appearance of having been the original cause of the trouble and having probably acted as a foreign body for months.

The disease, after this operation, practically abated, although it was some weeks before the sinuses all closed, and the treatment was continued until that time.

Present appearance, eight years after the cessation of the trouble, patient strong and well nourished, has five scars about the angle of the jaw on the cheek, and a decided sinking and loss of tissue at the angle of the jaw and extending forward to the bicuspid teeth. The two molar teeth are gone, having been lost during the progress of the disease. The second bicuspid tooth came in, but decayed very shortly after and its removal was rendered necessary as it was also ulcerated; it had, however, ample root formation. The mucous membrane of the cheek is drawn towards the opening made at the operation by cicatricial bands, adherent to the reproduced portion of the jaw bone, which has changed its shape slightly at the angle in consequence of there being no teeth to oppose the upper molars.

The patient is rather a prepossessing child and is but slightly deformed as a result of her necrosis.

H. D., male, age 6, United States. Has a syphilitic history on the paternal side, which disease, as far as can be ascertained, was never contracted by the mother. Has no family history of diseased bone. Was in the enjoyment of excellent health, and had suffered from none of the diseases of childhood; at five years of age he had a moderate swelling of the face and toothache, so-called. The pain in the face and swelling increased to such an extent that in three days the parents were compelled to consult a dentist, who extracted the tooth supposed to be the cause of the trouble; the tooth drawn was only slightly decayed.

The drawing of the tooth was immediately followed by so rapid an increase in the swelling that on the second day thereafter the patient was unable to open his mouth.

Two months after this time, the child meanwhile having been very ill and suffering great constitutional depression, an operation for the removal of dead bone was performed, and five small scales varying in size were removed; all of these scales were very thin and rather longer than they were broad.

First saw patient one year and two months after the onset of the disease; there were several internal and external scars and openings where previous incisions had been made. The face was swollen and hard, but the inflammation was not and had not been very severe for a few weeks, the discharge of fetid pus was very great, an abundance of dead and roughened bone could be readily detected and it was easily movable when traction was made upon it with a bent probe.

Immediate operation was advised, the patient was etherized and a long incision made extending from the angle of the jaw nearly to the median line; the left half of the inferior maxillary bone was removed in two large pieces; a number of spiculæ of bone of different sizes also came away during the operation. The largest piece represented the body of the jaw and had connected with it two teeth not completely formed, slightly discolored, dead and not in process of formation, as there was no pulp adherent to them. The other piece consisted of the angle of the jaw, the condyle and coronoid process, and required for its removal sharp traction on the dental forceps, although it was undoubtedly separated from its periosteal cradle. After the removal of the bone mentioned the parts were thoroughly cleansed until no particle of dead bone could be felt at any point.

The child passed from my care after the operation but never had any subsequent attacks of inflammation and no dead bone was discharged or removed after that time, although the purulent discharge continued in decreasing amount for nearly a year. The long continuance of the discharge after all dead bone had certainly been entirely removed, is ascribed to the fact that proper antiseptic treatment was not continued, the parents being unable to persuade the child to undergo any further manipulation or application after the operation.

I have with difficulty been able to induce him to present himself for inspection at this time, over seven years after the trouble has passed away.

He is 13 years old, male. His general health is good, and has been so since the discharge stopped six years ago. During this time two teeth were erupted in addition to those at present in the jaw; one was on correct line but was partly decayed, the other was out of line and grew towards the cheek; the removal of this tooth was not painful but the line tooth was more firmly fixed and caused some pain on its removal. While these teeth remained in position they were a source of irritation, and also had a slight but constant purulent discharge from around their roots; after these teeth were removed, there was a great decrease in the tumefaction of the side of the face.

Inspection discloses a large scar on the neck, the result of a cervical adenitis which had occurred in the early stages of the disease. The angle of the jaw is depressed and the side of the face is very much sunken at that point and in front of it nearly up to the median line. The lower jaw as reproduced is much shorter from before backwards than it was formerly, the central teeth striking about three-quarters of an inch behind the natural line, as shown by the position of the teeth of the upper jaw.

He has one bicuspid and an eye tooth on the diseased side, and also the central and lateral, which are in correct position; the eye tooth is misplaced, growing forward with most of its root exposed, and is partially decayed, and should be drawn. The bicuspid is in line and in position and seems to be a perfect tooth.

The jaw bone has made a complete reproduction but is composed on the diseased side of a comparatively small amount of osseous tissue; it is very useful, and strong enough for any of its ordinary uses.

The resulting deformity is much greater in this case than in either of the others, the sinking of the cheek and shortening of the maxilla giving the features a peculiar cast.

The study of the cases here reported and the history of other cases considered, indicate that incision and appropriate treatment in the early stages of the disease have a decided tendency to lessen its extent, while early efforts at removal of dead bone before separation has occurred are apt to increase the extent of the disease and resulting deformity, and may lead to a fatal termination.

CADAVER STUDIES ON THE REMOVAL OF THE SEMILUNAR GANGLION THROUGH THE FLOOR OF THE SKULL.

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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The horrible severity of pain in certain trifacial neuralgias is such as to drive the patient to the verge of suicide. Most of them are relieved for a period of one or two years by operations already well known, and a few are cured for life, but the majority relapse, because the neuritis has progressed to the semilunar ganglion, and hence nerve sections and stretchings below that organ relieve only temporarily. I have formerly shown that this relief can be repeated at least several times, by reopening the wound and pulling upon the cicatrix to which the stump of the nerve is attached, thus subjecting the stump and the ganglion itself to repeated stretchings, but I have

little faith that the cure can be indefinitely repeated by this process.

I long ago concluded that the disease, in most cases, commences as a progressive neuritis excited by a decayed tooth, and extends upward into the ganglion itself, and hence that nothing less than the removal of the ganglion will effect a cure in the most obstinate cases. About a year ago, I commenced cadaver studies to see if I could devise any safe operation for the removal of the offending organ. It appeared six months later that Prof. Wm. Rose, of King's College Hospital, London, was independently considering the same question, and since that time he has performed the operation twice on the living subject, with success, thus fairly earning the credit of priority in point of time.

My experiments upon the cadaver, however, have interested me greatly, and throw much light on the best routes and methods of procedure. They also show that about six principal variations are possible in the plan of the operation. Cadaver studies are specially important, in this operation, because we cannot test and perfect the technique upon the inferior animals, since there is no species having a cranial anatomy near enough to that of man to answer the purpose.

The fifth, or trifacial nerve, emerges from the side of the pons Varolii as a rather large flat, striated band, and runs forward over the crest of the petrous portion of the temporal bone near the apex, where it enters an opening in the dura mater. This tough membrane, on the anterior slope of the petrous portion of the bone, divides into two layers, and contains the ganglion between them, so that the latter is, as it were, encapsuled in a flattened cavity of the dura mater about the size and shape of a small Lima bean. The under side of the ganglion lifts easily from the floor of the capsule, having a bursa under it, an arrangement which facilitates separating it from the underlying carotid artery, but the upper surface is very firmly adherent to the roof of the capsule, so that even a curette can scarcely dislodge it. This arrangement adds greatly to the safety of the removal of the ganglion.

Out of this capsule the three branches of the nerve run, and the largest one, the inferior maxillary, passes downward and outward through the foramen ovale, and becomes the guide of the surgeon to the capsule of the ganglion. It is sheathed with a stout prolongation of the dura mater, which withstands pretty strong traction without rupture.

Besides several small twigs, the inferior maxillary divides into two main trunks, the dental and the gustatory.

The semilunar ganglion, or rather the under side of its capsule, lies in part directly upon the internal carotid artery where that vessel emerges obliquely from the petrous portion of the temporal bone, and its inner border is in close relation with the curve of the artery, where it enters the cranium, and also with the cavernous sinus, so that care must be exercised not to wound these vessels.

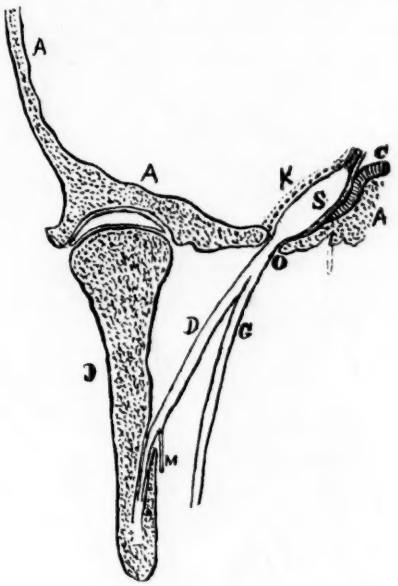


Diagram of part of the relations of the semilunar ganglion.
A A A.—Portion of skull.
J.—Condyle and ramus of jaw.
S.—Semilunar ganglion seen edgewise.
C.—Internal carotid artery.
K.—The double dotted line represents that layer of the dura mater constituting the roof of the capsule of the ganglion. The white line between the ganglion and the artery is the under laver or floor of the capsule.
O.—Foramen ovale at exit of inferior maxillary nerve.
D.—Dental branch.
G.—Gustatory branch.
M.—Myloid branch.

This cut is a diagram only, to show certain relations, and not a precise section.

The ganglion is therefore in a very inaccessible location, being inside the skull, near the centre of the cranial floor, and in dangerous relations with great vessels—facts which have heretofore ruled it out of the field of operative surgery.

A closer study of the parts shows, however, that boldness and skill can storm the citadel. The point of approach must be at or near the foramen ovale, but in order to operate in such a location we must, by certain preliminary steps, uncover the parts, so as to see them with the eye, touch them with the finger, and attack them by a precise and unerring use of our instruments.

Fortunately, there are infallible landmarks to guide us to the foramen ovale, as a study of the topography will show.

My studies on the cadaver show the possibility of six forms of operation:

1. Prof. Rose's first operation, which was done by him six months ago. He uncovered the foramen ovale by excising the whole of one superior maxilla, thus getting at the parts from the front. He inserted the centre pin of a small trephine

into the foramen, and took out a button of bone surrounding it, and contrived, through the opening thus made, to extract more or less completely the ganglion.

The base of the skull seen from beneath.
O.—Foramen ovale.
S.—Foramen spinosum, for middle meningeal artery.
P.—Pterygoid ridge.
T.—Place of applying trephine in operation No. 3.

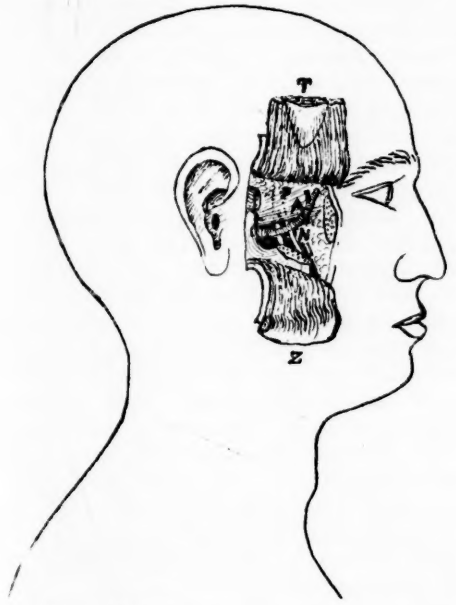
The patient's eye seems to have suffered some injury, for it became inflamed after the operation, and had to be enucleated, but the neuralgia ceased, and at the latest advices had not returned.

2. Rose's second operation was done last January. The method of uncovering the field of operation is very ingenious. Instead of removing the superior maxilla, two perpendicular incisions are made, one a little in front of the ear, and the other at the anterior extremity of the zygomatic arch, the posterior one commencing at the height of 2 inches above the zygomatic arch, and extending as low as can be done without severing the duct of Stenon, or more properly of Stenson. The anterior incision commences at the same height and extends a little lower than the posterior one. A horizontal incision extends along the zygomatic arch, connecting the other two. The zygomatic arch is now sawn off at each extremity, and turned down, carrying the attached masseter muscle with it. This uncovers the coronoid process of the lower jaw, which is sawn off at its base, and turned up upon the temple with the temporal muscle attached.

This uncovers the deeper parts, which are carpeted with a loose connective tissue containing, in most instances, the internal maxillary artery, with many smaller vessels; yet in some cases that artery takes a deeper course, running internal to the external pterygoid muscle. The connective tissue being drawn aside or snipped away, and the artery or arteries ligated, if necessary, the short and thick external pterygoid muscle will be seen, running horizontally from the external pterygoid plate backward to the neck of the jaw. Usually the internal maxillary artery comes out from the inner side of the neck of the jaw at the lower border of this muscle, and winds forward and upward around its external border. Carefully clearing away the connective tissue below the muscle, the large inferior dental nerve will be found, running down from the inner side of the muscle to the inferior dental foramen in the centre of the ramus of the jaw, and a little in front of it, the equally large gustatory branch, on its way to the tongue. These unite higher up into one trunk, which can be traced, with a little patience, up to the foramen ovale about 1½ centimetres forward and inward from the inner border of the condyle of the jaw. By feeling for the sharp edge of the external pterygoid plate, and tracing it up to its junction with the base of the skull, it will be found to lead exactly to the anterior extremity of the foramen ovale, so that we have two guides to the orifice, the great nerve, and the sharp edge of the external pterygoid plate. If the external pterygoid muscle is thick and voluminous, it may become necessary to divide it near the neck and retract it with a suitable instrument, so as to uncover the foramen. The axis of the foramen has such a direction that a line drawn from the centre of the coronoid process upward and inward through the centre of the foramen, passes just beyond it into the centre of the ganglion itself.

The trephine is now applied, but owing to its position being oblique to the floor of the skull, the crown of the ordinary instrument strikes the bone, without the centre-pin being able to reach the foramen, and consequently the saw cannot be steadily worked. To overcome this, the centre-pin must be capable of being protruded 2 centimetres, and have the end round and blunt, instead of sharp, and be withdrawn as the saw progresses, so as to run no risk of entering the skull too far, which would endanger the carotid artery. The centre-pin is also made about one-

half the diameter of ordinary centre-pins, otherwise it will be sometimes too large to enter the foramen. As the crown of the saw advances, the pin is drawn back. Prof. Rose uses a trephine of ½ inch inside diameter, like the specimen here shown. If this is done, it must not be advanced too far, otherwise the inner side of the crown will come directly upon the carotid artery, before it enters the cavity of the skull. When the inner half has cut a little way in, remove the button, and clear away needed portions of bone with other instruments.



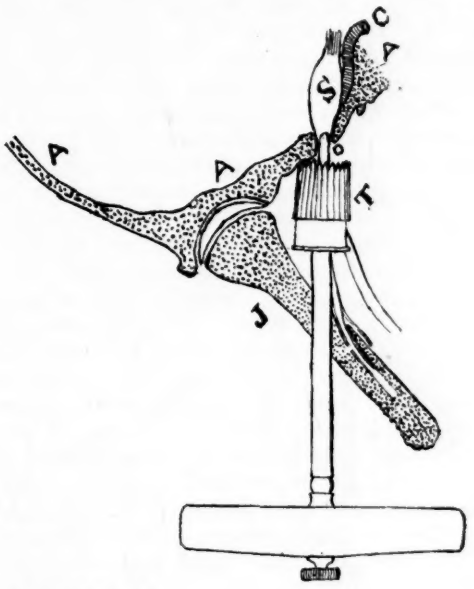
View of relations of the nerves.
Z.—Zygmotic arch and masseter muscle turned downward.
T.—Temporal muscle and coronoid process turned upward.
P.—External pterygoid muscle.
N.—Inf. dental and gustatory nerves. Their continuation upward behind the pterygoid is intimated by dotted lines. The emergence of the common trunk from the foramen ovale is at the left of P. and covered by the muscle.
A.—Internal maxillary artery.

The extra length of shaft is to enable the handle to clear more easily the face and jaw, but still the ordinary length can be used.

The ganglion is in the bottom of the hole left by the instrument, and can be removed by curetting and by a small hook-shaped bistoury devised by Prof. Rose, assisted by a blunt hook. The carotid artery lies in contact with the ganglion on the face that looks downward, backward and inward—corresponding to the anterior slope of the petrous portion of the temporal bone. The vessel also curves around the upper and inner border of the ganglion directly in line with the axis of the foramen ovale, so that instruments must not be pushed too far in that direction, for if advanced too deeply, the crown of the trephine will cut the artery.

3. From careful dissection, and experimentation upon the cadaver, I am convinced that the following plan is better than either of the others:

Reflect the masseter and temporal muscles as before. Expose the external pterygoid muscle, divide it near the condyle, and draw it out of the way with a suitable retractor. You now have a considerable area on the base of the skull, where there is no important organ to be wounded. This is a smooth triangle, having the pterygoid ridge of the temporal bone as its base, and its apex a little beyond and including the foramen ovale. One head of the external pterygoid muscle arises from this clear area, which should be dissected up and retracted, or snipped out. This will give



A. A. A.—The skull.
S.—The semilunar ganglion.
O.—The foramen ovale.
J.—The ramus of the jaw.
T.—The trephine with the blunt center pin in the formen.
C.—The carotid artery.

you a third guide to the foramen ovale, for if you clear away the tissues from the bone in a direction forward and inward from the inner border of the condyle, you will come unerringly, at the distance of about 1½ centimetre, to the outer side of the foramen, which is an opening about ¾ of a centimetre in length, so that it need not be missed, even if the nerve had been torn or cut away by any accident. This clear space is over 2 centimetres in diameter, and affords abundant room for a 2 centimetre trephine, as shown at T, Fig. 2. Backward and outward from the posterior end of the foramen ovale, and at the distance of about ½ centimetre, the middle meningeal artery enters the skull through the foramen spinosum, so that, if meningeal hæmorrhage occurs in the use of the trephine, it can be stopped by pressure of the tip of the finger at this point, or by ligature, or by plugging the foramen spinosum.

Also when the button of bone is withdrawn, the artery can be seized through the trephine

hole, since it lies on the external surface of the dura mater.

Curved and blunt pointed bistoury, modified from that of Rose.

Now apply a medium-sized trephine at the point marked with a black circle in Fig. 2, and carefully remove the included bone, setting the inner edge of the saw within 3 or 4 millimetres of the outer edge of the foramen ovale. Next take a narrow guage forceps and nip away first the isthmus of bone between the trephine hole and the foramen, and then, drawing the nerve outward into the trephine hole, nip away the inner border of the foramen. By a good artificial or natural light, you now see well exposed a pretty large ovate area of dura mater, with the large inferior maxillary nerve emerging from its further portion. The sheath of the nerve here is very strong, so that it can be freely pulled during the further manipulations. Now peel up the dura mater from the floor of the skull under the ganglion, going a few millimetres beyond the locality of the foramen ovale. This lifts the ganglion with the membrane, it being included between the two layers. Next seize the nerve, or the stump of it, near the opening, with narrow forceps, and draw it outward. Dissect off the dura mater from its posterior or further surface of the insertion of the nerve, and you will come into the capsule and the bursa between the gland and the floor of the capsule. Extend the opening of the capsule to the right and left somewhat freely, and with a careful use of Rose's knife or a very small blunt-pointed and curved bistoury, divide the origin of the superior maxillary nerve, and if possible of the ophthalmic branch. The latter lies very close to the cavernous sinus.

Now have an assistant lift the dura mater, while another one draws the nerve inward, and you will be able to open the dura mater and very slowly to dissect the ganglion away from its firm adhesions to the roof of the capsule. This dissection is a little tedious, on account of the firmness of the adhesion, but patience will accomplish it, and if one or more slight cuts occur through this upper layer of the capsule of the dura mater, no dangerous results will follow. Indeed, it might perhaps be well to take curved scissors, and cut out a small circle of the roof of the capsule and take it away with the ganglion, thus shortening the operation. This operation admits of splendid illumination, and enables one to see clearly the steps of the dissection.

4. A fourth method is possible on the cadaver, but less easy than the third. It is to commence as in the previous operation, but to set the centre-pin about a centimetre farther out on the pterygoid ridge, and remove a large button of bone. Then raise the dura mater from the floor of the skull, working inward until the ganglion is lifted and the finger feels a large probe inserted into the foramen ovale. Now open the capsule and patiently work out the ganglion, guided by feeling rather than by sight.

5. A fifth plan can be carried out as follows: Leave the zygoma and the coronoid process untouched. Raise a semicircular flap of scalp and temporal muscle from the temporal fossa in such a way that a large trephine can be set on the bone, with its lower edge close down to the zygoma, much as in Stephen Smith's operation for tying the middle meningeal artery inside the skull. Remove the button and, making a flap in the dura mater, insinuate a peculiarly shaped curved spatula under the convolutions of the brain, and lift them from the floor of the middle fossa. The ganglion lies on the anterior slope of the petrous portion of the temporal bone, with its lower edge about 2½ centimetres from the lower edge of the trephine hole. Pass in the finger under the arch of the spatula, run it along the petrous portion to identify the locality of the ganglion by its softness. Withdraw the finger, throw in a strong light, dissect out a circle of the roof of the capsule of the ganglion, and use the hook-shaped bistoury, bent scissors and curette to sever other attachments.

This plan temporarily compresses the brain, and makes some unavoidable contusions and slight wounds of the convolutions, but it is not very difficult. It would be doubtless more dangerous than either of the others, and therefore is not to be preferred in our present state of knowledge.

6. The sixth and last method is to make an incision from the anterior edge of the temporal muscle down to the anterior slope of the coronoid process, and saw off the anterior end of the zygoma. Next saw off the posterior end through a small opening in the skin. Then saw off the ramus of the jaw from the middle of the anterior slope of the coronoid downward and backward to near the angle of the jaw. Raise this flap of skin, muscle and bone as on a hinge, and turn it back over the ear. My first hope was to uncover the deeper parts in this way without sacrificing any bone, but the result was to pry the condyle of the jaw inward, bulging the external pterygoid before it, and effectually covering the foramen ovale from sight; hence, if this plan is adopted, it is necessary to exsect the condyle, draw away the external pterygoid, and divide part of the internal pterygoid, in order to follow the inferior maxil-

lary nerve into the foramen. This and the plane surface of bone external to it being thus exposed, the operation is finished either as in No. 2 or in No. 3. The loss of the condyle is an objection in this case, just as the loss of the superior maxilla is in No. 1. On the whole No. 6, though mechanically feasible, cannot be recommended.

Of the whole six, I give the preference to the third, which uncovers the parts as in Rose's second operation, but applies the trephine at a different spot.

In the two cases operated on by Prof. Rose, the first lost the eye by inflammation following the operation, due perhaps to accidental injury at the resection. In the second case the professor informs me that the eye, three months after the operation, was in good condition, and was recovering its lost reflexes. Both patients were relieved of their pain, thus far, but more time must elapse to demonstrate the permanency of the cure.

As the eye is deprived of sensation, the patient must be taught to care for it and protect it. In the same way one side of the tongue being benumbed, it must be guarded from being wounded by the teeth.

A neurotomy of the fifth nerve on the proximal side of the ganglion can be performed, without removing the latter. If you proceed as in operation No. 3 till the button of bone is removed, and then open a flap in the dura mater external to the ganglion, the convolutions can be lifted, and a knife with a double curve and blunt point can be passed over the crest of the petrous portion of the temporal bone, and made to cut the nerve where it enters the capsule of the ganglion. This operation is possible, but does not seem advisable. It is not best to replace the button of bone in these cases, because a certain portion of such pieces necrose, and the deep location renders the subsequent extraction of the dead fragment difficult.

On the whole, the removal of the semilunar ganglion is a slow and rather complicated operation, but it is not very dangerous. It is to be employed without hesitation whenever a trifacial neuralgia is so severe and so incurable that the patient has no reasonable hope of relief from extreme pain by other measures.

Time only can show how many will be permanently cured. From the nature of the case we should expect that the cured cases would be a large majority, but that in a few the brain itself may be the seat of disease, and baffle our efforts. If the brain is the seat of the trouble, we can usually determine it by the coincident presence of other cerebral symptoms, and thus avoid operating upon hopeless cases.

In making these researches upon cadavers, I am indebted to Profs. Wyllys and Frank Andrews for valuable assistance.

No. 6 Sixteenth St., Chicago.

PERITONITIS, FROM A SURGICAL STANDPOINT.

Read before the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY M. PRICE, M.D.,
OF PHILADELPHIA, PA.

There is no more important subject presented for our careful consideration, or more deserving our most earnest thought, than peritonitis.

It is practically a new field for investigation; few of us comprehend its magnitude, or the importance of the work now being done. Idiopathic peritonitis is a myth and a delusion. The error has been that symptoms have been mistaken for the disease, and when relieved, a cure is accredited to some special form of treatment. Vomiting and tympanitis with pain does not necessarily indicate peritonitis.

There are many conditions of the digestive tract that will give all these symptoms, yet no peritonitis be present. And you may have peritonitis without pain, without tympanites, in fact, almost devoid of symptoms, yet have many ounces of purulent fluid in the peritoneum.

Peritonitis always has a cause, and if the case be properly investigated, we can find it. For so serious a condition, it is one of the most curable diseases we are called to treat. That is, if we investigate the cause, and remove it. And then again, it is most wonderfully submissive to bad treatment. Improving again and again under the opium treatment, which is the worst of all, for it blinds the practitioner to the dangerous forms when they do appear for proper treatment, and where nothing but the proper treatment will save life. I marvel at the great credit men give to the opium treatment of peritonitis. And when recovery takes place, credit all to their treatment, with not one thought of the wonderful protective power of nature to guard her inner work.

Have they treated the condition, the actual disease, the exciting cause? No, in most cases they have not even investigated to find the cause; but have contented themselves with the thought that their patient is now all right, notwithstanding the fact that the patient suffers repeated attacks, until there comes a time when the operating table or the post-mortem table reveals to the wondering practitioner a cause. Thanks to the surgeon, we do not have to resort to the post-mortem to find what has given our patient peritonitis, or the way for their relief. I purposely avoid quotations from standard works; all of you are familiar with them, and as most they say does not interest us at the present day, I will not trouble you with either their pathology or their so-called treatment, with opium as their sheet anchor. I except those writers of a century ago: Dewees, and that great teacher and writer, George B. Wood. How strange that medical men are so

forgetful of the teachings of these masters of their day! Men follow the fashions of their professors.

Peritonitis is a disease so peculiarly surgical in the development of its pathology, and the perfection of its treatment, and the utter extermination of its mythical origin, that we do not any longer have to resort to the dead-house for our knowledge of its history. Ante-mortem examinations have taken the place of the dead-house pathology of only a few years ago. We all remember to have made such examinations that, to-day, by operative measures, the patient could have been saved. Its cause removed, and thereby forever preventing the return from the same point of infection. For some of these cases passing through my hands have had as many as five different attacks, and had it not been for surgical aid they could not have been saved.

The peritoneum in health is a lymph sac enclosing every organ in the abdominal cavity. There are a few exceptions to this rule, but of slight moment in the consideration of the subject of the inflamed condition. A peritonitis may be partial, or it may include the entire membrane; a general peritonitis. The symptoms are mild or severe, partial or general, owing to the nature of the irritating cause. It will, in most cases, begin with a chill, but not always. It usually has at the beginning a high temperature, but not invariably. Pain on pressure is one of the best, and by all odds the most valuable symptom we have to guide us to a correct diagnosis. Yet, the pain may be so slight that the patient may not call our attention to its existence. The pulse may be quick from the start, and, after a short period, become hard and tense.

There is no single symptom that can be depended upon, many patients when operated upon having a pulse as high as one hundred and fifty, and they made just as rapid recovery as those whose pulses were at eighty, full and strong. In most cases, however, the pulse is thin and thready. Tympanitis is not a constant symptom, though one that gives a great deal of trouble, and adds wonderfully to the risk of the patient.

The expression of the face, next to pain, is probably one of our best diagnostic symptoms; it is one of great anxiety and alarm expressed in every feature; they seem to have aged many years in a single day. The features seem pinched and prematurely old. The bowels are always constipated, unless we have a case of peritonitis resulting from dysenteric ulceration, or from some complication of the intestinal tract. The old treatment of putting the bowels in splints by opium was certainly unnecessary, as it had already been done most effectually by the paralyzing influence of the inflammatory condition.

Then, to properly understand the condition of our patient, we must investigate every organ in the abdominal cavity; the pelvis through the bowel, if it be a man, and through the vagina, if a woman. We can thus derive great help and often a perfectly clear understanding of the condition, when we can get it in no other way.

In almost all the cases to which we are called to remove the source of infection, the effort of nature to limit its destructive ravages are well marked by protective lymph walling in the diseased portion. In the many examinations we have made on the operating table of peritonitis, the conclusions that have been forced upon us by such investigations prove to my mind that there is always an irritating and demonstrable cause for all cases of peritonitis.

I have never found a case without positive indications of destructive changes going on in the infected parts, the contents bathed in serous sero-purulent fluid, with adhesions varying from slight to those so firm that it was easier to tear the surrounding tissue than the adhesions, with small collections of pus in many different places walled in by the peritoneum in its efforts to prevent general infection. Young and old alike suffer from its ravages. Both sexes do not suffer alike, for the reason that women are by all odds subjected to many times the dangers of this condition by causes peculiar to their sex.

The older writers did not give peritonitis a separate place, but associated it with other lesions within the abdominal cavity, clearly showing they did not endorse the theory of its idiopathic origin. How near do they come to the pathology of the present day?

I have, in the last five years, operated or assisted with five hundred operations for the cure of peritonitis; all of them so serious that life without operative treatment could not have been saved. All of them had been treated by medical men of the best standing in the profession, and at least four-fifths by firm believers in the opium treatment. Many of these patients had suffered more than one attack, some of them as many as five before they had come to that point of their disease where some radical measures had to be resorted to to save life and remove the point of infection. Beside this, I have examined some twenty, who were past all surgical aid when I was called to their side, and in every case a well-defined cause was found for all the trouble. There was not a single case examined in all this long series of cases without lesions of such serious nature that they must by their very character have proved fatal at no very distant day. There was not one case of idiopathic peritonitis in the list, though more than one-third of them had been so named by good men. In the month of December I had the good fortune to assist at eleven bad cases of localized and general peritonitis, and operate four times myself, all of which

must have been fatal very soon, some of them having had several attacks.

The advocates of the opium treatment speak of the disappearance of the distention, and softening of the abdomen after a number of days. In our experience if the case be one of true peritonitis, and the symptoms do not improve under saline purgation, and the temperature come down below the pus standard in from three to five days, we at once decide to remove the cause by operative measures, and I have yet to regret the use of the knife in these cases, but I can say I have to regret some of the delays I have been persuaded into by the fears of other counsel in the cases. Prompt purgative treatment in the beginning of peritonitis, by the saline purgation or the mild chloride of mercury, to clear up the case in the very beginning, and then when you have done all this, and there is no improvement you must, in the present light that surgery has thrown on the subject, operate.

Peritonitis from other causes, the indications being the same, show the great tolerance to manipulation and contact with the poisonous pus in which every known form of microbe must have existed by millions, where large flakes of inflammatory lymph had to be removed by scissors, where the adherent bowel was detached from the pus sac, and yet with all these complications and with all the microbes and pus there was not one case of peritonitis following operation in the whole series of over five hundred cases. What were the causes for all these five hundred cases of peritonitis? all had a cause, and the cause was found in every case. To enumerate all the causes that might cause peritonitis would be a most thankless undertaking, for they are innumerable. The vast area and the important glandular organs enclosed in the peritoneum, add their mite to the list, but by all odds the most prolific cause of peritonitis comes from a diseased condition of the uterine appendages; these offer a direct way of entrance to some of the most virulent poisons to which women are exposed. This mode of entrance and the subject to which it relates, and its influence in the formation and production of peritonitis, local and general, has been the subject of many papers, I might say volumes. I need not here mention it more than as a prominent cause.

Second in importance is that of appendicitis. Here is a prolongation of the large intestine, unused, a place for the lodgment of foreign substances and concretions of its own formation, with none of the cleansing and purifying conditions which other portions of the bowels are constantly subjected to in the constant moving of the contents, and the contact of the secretions of the digestive fluids of the different glands, which have by Nature been placed to correct just that condition to which the appendix is exposed, with no power to remove. From this source come many of the causes of peritonitis.

In the treatment of peritonitis in the past great latitude was allowed, and medical men made the most liberal use of the privilege in the use of opium and its preparations. Some delighting in the extracts, others a mixture with other drugs, all trusting with implicit faith in morphia in large and repeated doses as much as one grain every two hours, others recommending as much as four hundred grains in the twenty-four hours of the pure extract of opium. Others prefer the liquid preparations, they in their turn mix and blend them in a manner and with a faith as to their marvellous curative qualities that some of us are unable to understand. Great weight is laid on the indications for the use of opium; one observer is satisfied when the patient is relieved of his pain, another not content with this condition alone gives opium for its effect, and his measure of guidance is the respirations; when they have been reduced to ten or twelve per minute, he then considers his patient safe. Then when opium does not bring the result so earnestly sought after, they use a combination of calomel and opium; one they say to stop the secretion of bile, and the other to start the bile on its usual way. They report many happy results, many patients saved by this most ingenious blending of the incompatible. The other treatment contemporary with that just alluded to of peritonitis, such as poultices, blisters, turpentine and the warm application, all to my mind indicate what the practitioner expected to be the result—the formation of pus. This is just the treatment he would give to an existing or threatened abscess in any other portion of the body. How long will this state of things last! Can we not offer them some more encouraging method of treatment? I think we can. I hope the day is past when we will follow blindly the teachings of any man or set of men, but will weigh the facts as they are given us, and from them and our own knowledge of the subject, build a new and more comprehensive treatment than that of the past, which I fear is now almost the only treatment for this most destructive disease when not properly treated and by the most energetic and rational methods.

My firm belief is that when called to a case of supposed trouble to make at once earnest search for the cause, and, if found, to remove it at once, is the proper course to pursue. If the cause be not apparent, then clear up the case with saline purgatives, and when not able to do so, then abdominal section. And, as I have said before in this paper, you will never have cause to regret it. Prompt adherence to this rule has been the practice of all those men who have learned their pathology at the operating table instead of the dead-house.

The present way of treating these cases was also the old way used by the majority of the profession. The very first thing is opium in some form to relieve the pain, as they will tell you in most cases without looking for a hernia, or any other cause for the trouble. Pain is the only symptom complained of, so most men are content when the patient is relieved of that.

I have been called to a patient suffering from strangulated hernia, with all the symptoms of peritonitis, and the medical attendant not aware he had anything more than a case of idiopathic peritonitis to deal with. I will venture to say, that if all the medical men in this city could be asked what the first thing they would do for a case of threatened peritonitis, they would say relieve him or her of pain by opium. It is the almost universal rule, notwithstanding the stress laid on the great danger to the patient in such treatment.

There is still another and most important reason for early treatment in these cases. We all know that one of the favorite and accepted theories of the introduction of tubercle bacillus is through the stomach in its deranged and diseased condition from any cause, and in this way into the general circulation to be deposited in that portion least able to resist its ravages. In these cases where we have a subacute inflammatory condition with large deposits of inflammatory matter of low vitality, where the circulation is in a most unsatisfactory condition, where the thermometer indicates a temperature in which these little bodies grow and flourish to a most alarming extent, tissues of low vitality are fastened together. What better culture ground or condition could even a pathologist wish for in which to feed and grow his medical menagerie. Be this true or not, the fact still stands forth that many of these chronic cases die of tuberculosis.

A NEW OPERATION FOR HARELIP.

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May 5, 1891.

BY CHRISTIAN FENGER, M.D.,

OF CHICAGO, ILL.

In all forms of harelip (labium leporinum, whether single or bilateral, whether partial or total, whether combined with cleft inter-maxillary bone or not), we find not an excess, but rather a defect of labial tissue, mucous membrane, prolabium and skin. The two portions of the upper lip, when brought together, are too small to form a lip of normal shape; it would require the interposition of a triangular piece of lip with apex towards the nose and base toward the border of the lip, to obtain at once a lip of normal shape. The tissue defect is greatest in the skin, less manifest in the mucous membrane and prolabium; still in the majority of cases of complete harelip, the defects in these tissues also may be considerable.

It would thus seem natural to select a method of operating by which no tissue should be lost. In all the older methods the so-called "freshening" of the surfaces to be united requires the removal of at least a part of the prolabium, in some more, in others less, at the best, as in the method of Nélaton for small harelip, a displacement downward, to form a projection which must either disappear by retraction and atrophy, or be removed, if present in excess, by a secondary operation.

About five years ago I was led to consider this question in a case of double harelip with rather defective lateral portions, in which I operated after the old method and suppuration with consequent non-union took place. At the next attempt at union, the increased defect of tissue made union still more difficult than at the first operation. I therefore concluded to operate in my next case without the removal of any tissue, so as to have at least not lost anything in this respect if suppuration and non-union should make one or more later operations necessary. When I commenced to operate in this way I found it necessary to apply a separate row of sutures to the prolabium before bringing the edges of the skin together, thus closing the wound toward the mouth, and I soon found this to be a protection against infection.

I have since that time never had any reason to abandon this method for any of the older methods.

1. OPERATION FOR UNILATERAL HARELIP.

1. *Incision.*—The incision is made at the border of the skin and prolabium, four to six millimeters or two to three lines deep, care being taken to guard against opening through the mucous membrane into the mouth.

It is necessary to draw the lip down in order to procure sufficient tension for the knife to divide the tissues; this traction causes anæmia of the border of the lip, making the line between the white skin and red prolabium indistinct. It is necessary to be careful to have the incision precisely in this line, because a small margin of prolabial tissue left with skin will, as I have seen in one case, leave a red brim along the line of union, necessitating a secondary operation for cosmetic reasons. (Figure 1.)

The length of the incision downward and outward depends upon the shape of the two portions of the separated lip. It is unnecessary at the beginning of the operation to estimate the length correctly, as the incision can be prolonged later on, after some of the sutures have been applied and tied, according to the requirements of the shape of the lip when united.

2. *Sutures of the Prolabium.*—Interrupted

sutures of fine silk are applied or inserted from the mucous surface so as to place the knot of the suture in the mouth, the first suture close to the top of the triangle as shown in Figure 2. The ends of the sutures are left long and held together with an artery forceps which is left hanging down. The succeeding sutures are applied in a similar manner at a distance of from three to five millimeters from each other in a number corresponding to the extent of the line of prolabium to be united. These prolabial sutures should include the mucous membrane and sub-mucous tissue only, or as little tissue as will suffice to keep the prolabial edges together. There must be no tension whatever at the line of union; if tension exists from shortness of the labial flaps, it must be overcome by the tension sutures, which will be described later.

Figure 1.

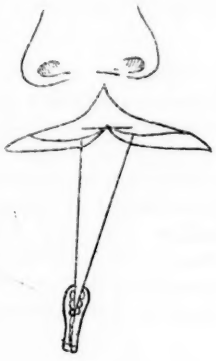


Figure 2.

When apparently a sufficient number of these sutures have been applied, they are tied from above downward, or from the nose to the prolabium, the upper or nasal suture first, the forceps being held up toward the forehead. The united line must be long enough to give sufficient length to the lip, and permit the lowest point of union to be a little lower down (toward the lower lip), than the sides of the lip and the corners of the mouth. The wound to be united is now closed against the mouth—is made a sub-cutaneous wound.

Sutures of the Skin.—1. Tension Sutures. According to the size of the defect, one or two tension sutures become necessary. I have entirely discarded the figure-of-eight suture with harelip pins, and also the button and shot sutures, and always employ an interrupted suture, using silk a little heavier than that used for the coaptation sutures of the prolabium and skin. In ordinary cases of single harelip one tension suture is sufficient. This suture enters the skin at a distance of one-quarter to half an inch from the cutaneous margin of the wound, and is passed deeply down into the tissue of the lip. Care is taken not to have it pass through to the mouth, but to have it take in about two-thirds of the tissue of the lip as shown in Figure 4 a. This tension suture should be placed at or near a point where the margins of the wound are the greatest distance from each other—that is, near to the prolabium of the undivided portion of the lip. The tension suture is left with long ends held by artery forceps, and should not be tied until all the cutaneous coaptation sutures have been inserted.

Figure 3.

2. Coaptation Sutures. These sutures (Figure 4, b.b.b.), for which common silk twist (which may be bought in a dry goods store, and disinfected in the usual manner by boiling it from fifteen to thirty minutes in a 5 per cent. solution of carbolic acid) is used, are applied from above downward, or from the nasal angle of the wound to the prolabium, at a distance of three to five millimeters. Three to five sutures are usually required. The lowest suture (Figure 4, c.), is passed through the ununited borders of the prolabium.

The wound is now carefully cleansed by small aseptic sponges, and is finally touched with a sponge wrung out from 2½ per cent. of carbolic acid, or a 1 to 2,000 sublimate solution.

If any hæmorrhage is present it can be stopped by continued pressure with an aseptic sponge for a few minutes; if the hæmorrhage is slight it will cease upon tying the sutures.

The closure of the sutures should begin with the tension suture, so as to prevent the coaptation sutures from tearing through, as they would be liable to do if tied before all tension was done away with.

If in drawing the sutures together it is found that the middle of the lip does not come down low enough, or that there is still an indentation in the prolabium at the line of incision, it is advisable to prolong the cutaneo-prolabial incision a little on one or both sides, as the shape of the lip may require, and then apply an additional cutaneous coaptation suture.

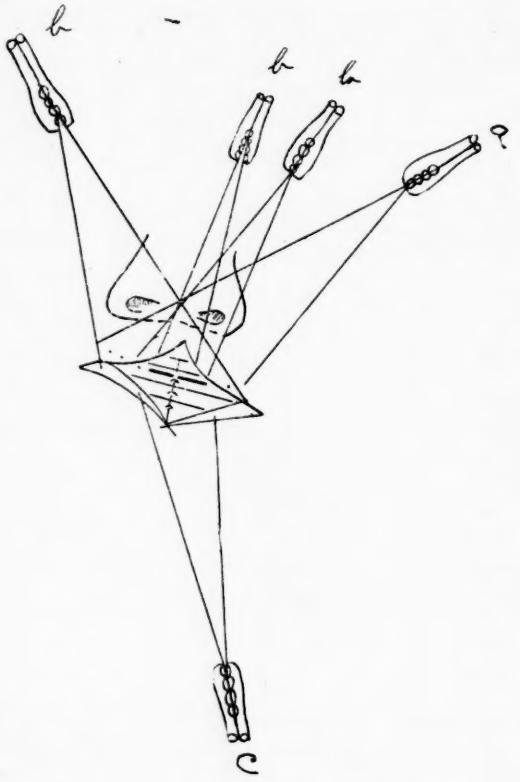


Figure 4.

When the cutaneous sutures are tied, the united wound should present the appearance shown in Figure 5.

4. *Dressing of the Wound.*—After careful cleansing of the line of the wound with saturated solution of boracic acid, a layer of finely powdered boracic acid is dusted on, and a cotton-collodion dressing applied. When I began to use this method I plugged the nostril with borated cotton, but on account of its inconvenience to the patient, have now discontinued this practice. I do not use iodoform-cotton or iodoform-collodion dressing for fear of iodoform poisoning; I prefer to have the nurse or mother dust finely powdered boracic acid into the nostril every three or four hours during the day.

A single or double strip of rubber adhesive plaster, extending from ear to ear, is applied over the collodion dressing in such a manner as to draw the two cheeks somewhat together, for the purpose of immobilizing the cheeks and lips when the child cries or nurses.

The dressing may be changed once a day, or every two or three days if it remains dry. If, however, the dressing becomes soaked by nasal secretion, or milk when the child is nursed, it should be changed according to the necessity of the individual case.

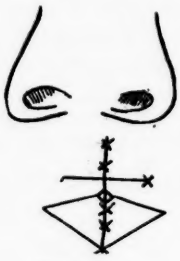


Figure 5.

5. *Removal of Sutures.*—The cutaneous coaptation sutures are removed after a week; the tension suture is allowed to remain two to four days longer if it has not been loosened by pressure atrophy, or pressure necrosis of its canal. After removal of the sutures, the borated cotton-collodion dressing and adhesive straps are reapplied to be continued until the suture canals have entirely healed, which takes place toward the end of the second or third week.

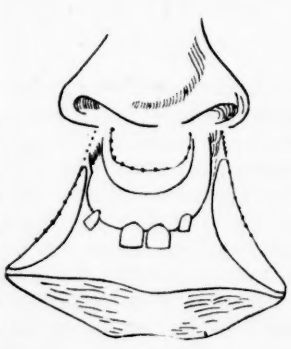


Figure 6.

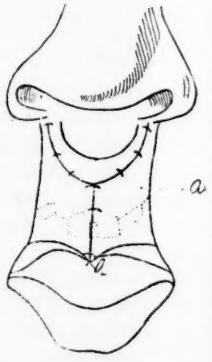


Figure 7.

At the junction of the two lateral corners of the wound there often remains after the suturing a small quadrangular ununited space one to two millimeters in diameter, where it may have been impossible to approximate the edges of the wound. (Figure 5 a.). A very fine suture may help to close this little defect. If, as is often the case, this little suture cuts through, the small defect heals by aseptic granulation, requiring only very little more time than the primary union of the remainder of the wound. It leaves at most a small cicatrix in the line of union at the border of the skin and prolabium, and does not result in permanent disfigurement.

The prolabial sutures will sometimes cut through and peel off if the process of healing goes on undisturbed, or some of the sutures may remain and be removed after the end of the second or third week, at a time when union is strong enough to tolerate the manipulations necessary for their removal.

II. OPERATION FOR DOUBLE AND COMPLICATED HARELIP.

The operation for double and complicated harelip (as represented in Figures 6 to 9), is performed on the same general principles, namely:

1. *Incision.*—The incision along the cutaneo-prolabial border should be of sufficient length to cover the space of defect. A second incision should be made along the cutaneo-prolabial border of the median peninsula of labial tissue below nasal septum, if this peninsula is so situated as to be available for use in the formation of the lip. (See Figure 6).

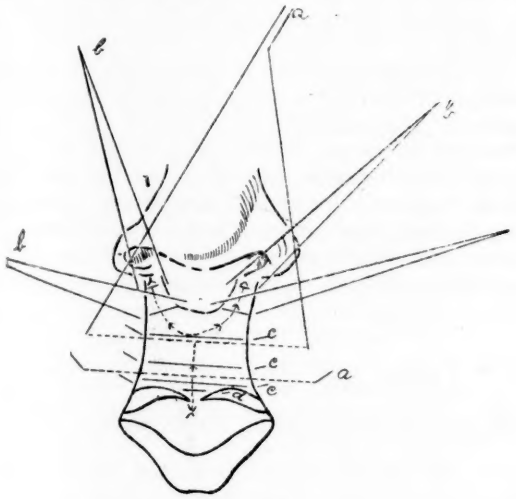


Figure 8.

2. *Suture of the Prolabium.*—The prolabial sutures are applied as just described for the unilateral harelip, to be tied on the oral surface of the wound. The sutures should be first inserted on both sides of the nasal peninsula until this is wholly covered, and until both lateral halves of the prolabium come together at the median point of its lower border. (Figure 7, a.). When this point is reached these two rows of sutures are tied.

The lateral prolabial borders are now united in the median line as low down or as far out as required to give to the lip the necessary length, as described in the operation for single harelip. These labial sutures are tied in the mouth usually without any tension, because the prolabium when loosened from the skin and retroverted, furnishes a flap of sufficient size and elasticity to permit of ready approximation.

It is important, as before stated, that the linear incision should not penetrate into the mouth. When, as is often the case when the cleft extends through the nostril or nasal cavity, there is a lack of prolabium near to and in the nostril, and the prolabial sutures cannot be applied high up, it is usually possible, by careful dissection and separation of the mucous membrane at the oral fornix of the lateral half of the upper lip, to displace the mucous membrane to some extent laterally, so that the uppermost suture may be applied reasonably high up toward the nostril.

When the prolabial sutures have been tied the wound presents the appearance represented in Figure 7.

3. *Sutures of the Skin.*—Tension and coaptation sutures are now applied as follows: (See Fgure 8).

1. Tension Sutures.—For these sutures somewhat heavier silk should be employed. The upper suture should be inserted at the lower border of the nasal peninsula, the lower one near

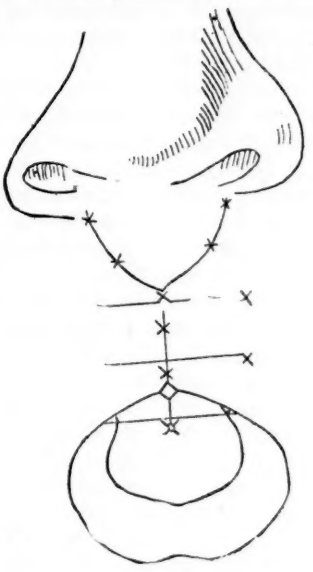


Figure 9.

the lower border of the lip. They should be passed in and out at a distance of a quarter to half an inch of the border of the skin, and should include one-half or a little more than one-half of the thickness of the lip. (Figure 8, a.) The ends should be held by artery forceps, and should not be tied until all the skin sutures have been applied.

2. Coaptation Sutures.—The coaptation sutures (Figure 8, b. c.), are now inserted from above downward. The first two or three sutures (Figure 8. b.), are inserted on both sides between the lateral skin flap and the skin of the peninsula, until this is united to the side flap throughout its entire circumference. The lateral flaps, uniting in the median line just below the nasal peninsula, forms the upper portion of a Y-

shaped line of union. Then the lower portion of the wound is united by two or three sutures (Figure 8, c.), and a lower fourth suture (Figure 8, d.) is inserted through the two halves of the prolabium.

After thorough cleansing and disinfection of the wound, the sutures should be tied: first, the tension, and then the coaptation sutures (Figure 7).

4. *Dressing of the Wound.*—The wound should be dressed with borated cotton-collodion, or in older patients, with iodoform collodion. The nostrils, especially in older patients, should be loosely packed with borated or iodoform cotton. Over this two straps of adhesive plaster should be applied. In older patients a strip of iodoform gauze should be laid in the mouth along the line of union of the prolabium. In new-born children the nostrils need not be packed with cotton, and no iodoform gauze should be used; but these localities should be frequently dusted with finely powdered boracic acid. The dressing should be changed according to the amount of discharge, never more than once daily.

5. *Removal of Sutures.*—The coaptation sutures of the skin may be removed at the end of the first week; the tension sutures, according to the amount of tension remaining, usually late in the second week; finally, what may remain of the prolabial sutures should be removed still later, when the union is so solid that the upper lip is able to tolerate manipulation.

It is immaterial how narrow the new upper lip may appear to be immediately after the operation. König remarks (in speaking on plastic operations on the lips—keiloplastic operations following the extirpation of labial carcinomas), that the shape of the mouth, however deformed it may appear, on account of unequal size of the lower and upper lip in the first weeks after the operation, that in the course of some months the shape of the oral orifice and lips becomes more normal, surprisingly so when a sufficient time, from three to six months, has elapsed.

The all-important feature of the operation is to make the upper lip long enough in a sagittal direction, and to have exact union of the lower portion of the prolabium.

Apparatus to draw the cheeks together for the sake of immobilization or to diminish tension, I have, up to this time, found superfluous.

CONCLUSIONS.

The two main points in this harelip operation are the incision and the prolabial sutures.

1. The incision, a linear incision, is similar to that made in the operation for laceration of the perineum as proposed by Lawson Tait, and by him termed "flap-splitting." As stated above, this possesses the advantage of not sacrificing any tissue of the parts already more or less defective; on the other hand, repeated denudations made necessary by unsuccessful attempts at union would tend to make the lateral portions of the lip smaller and smaller. Furthermore, the linear incision, by loosening the everted prolabium (which is readily converted into mucous membrane by the simple change of position into the oral cavity), furnishes so much tissue for the posterior surface of the lip that union of the prolabial borders is easy, even before any tension sutures have been applied.

2. The prolabial sutures should be accurately applied. Fine curved needles should be used, the sutures made of fine silk. Interrupted sutures should be employed, in sufficient number and at sufficient intervals to furnish exact union. These sutures close the wound against the mouth and make the wound, so to speak, cutaneous instead of visceral, and thereby prevent infection from the ever-present multitude of microbes in the mouth. I believe that this suture will prove to be a potent factor in securing uniform results by preventing suppuration and non-union of the wound.

3. The cosmetic results have been all I could desire. If a slight indentation at the line of union of the prolabium has existed immediately after the operation, it has generally disappeared after a few months, provided the lip has been made long enough at the time of the operation.

4. I think that this method is applicable in all cases, and should take the place of all the numerous older methods of operating.

SPRAINS OF THE ANKLE.

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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There is a popular impression among many of the laity "that a sprain is worse than a fracture," yet, to judge from the amount of space devoted to the subject in our text-books on surgery, it is evident that their authors do not agree with the statement. We must, however, admit that some grounds exist for the belief, and that, while we seldom hear of an ununited fracture, or of a fracture causing trouble years after the original injury, we are constantly meeting with cases of chronic sprain of the ankle, of flat foot, of various forms of bone and joint disease which we can clearly trace to a sprain. Several reasons exist for this state of affairs, and in many instances, the reason may be clearly shown to be the faulty or neglected treatment of the original injury.

Mr. Mansell Moullin, of London, in his most thorough and interesting monograph on "Sprains;

their Consequences and Treatment," says in his Introduction: "Few injuries are treated with so little consideration as sprains. It is impossible to overlook wounds, owing to the bleeding and pain which accompany them. Fractures, it is understood, require rest and care; but sprains, in which the tissues are torn to such a degree that the damage is far more serious than in many fractures, merely because they are so common, are considered of little or no consequence. It counts for nothing that the part injured is one of the most complicated structures in the body, and particularly liable to inflammation from the constant use to which it is subjected. Yet a fracture is regarded as very serious, a sprained joint as quite a trivial matter." Other authorities could be quoted to show that sprains in many cases receive little or no treatment; the patient is dismissed with the statement that it is only a sprain; bathe it in hot or cold water, or rub a little arnica or Pond's extract on your ankle. Nothing more is thought of the case, and years afterwards, the original injury having almost been forgotten, the sufferer applies to some specialist for treatment.

This state of affairs is very graphically described by Royal Whitman, M.D., in an article read before the American Orthopædic Association in 1890, on "The Treatment of Persistent Abduction of the Foot, commonly known as Chronic Sprain of the Ankle." He says: "The successful treatment of any chronic affection demands a personal, persistent attention to details on the part of the surgeon. This is particularly true of the treatment of what are known as minor injuries, and therefore neglected. One of this class, commonly known as chronic sprain of the ankle, may entail years of discomfort and disability, with permanent impairment of the functions of the foot. The usual history of such cases is as follows: Long-continued weakness and discomfort, following an injury to the ankle, treated by various physicians with liniments, blisters and bandages, until the discouraged patient is told that nothing more can be done, but that his symptoms 'will wear away in time.' A year or two later he presents himself, usually for the purpose of securing a brace, or for some peculiar shoe which he thinks may be of service to him."

I have quoted thus at length, because it is my firm belief that most of these disagreeable after-effects can be avoided, if the patient and surgeon will simply recognize the fact that every sprain, no matter how trivial, is worthy of treatment.

The prevention of a flat foot is easier and more satisfactory than its treatment, and a large number of the cases have their origin in a simple and neglected sprain of the ankle. The same is true of bone lesions, and if the injury is recognized, and its importance admitted, many cases will thus be saved from the unpleasant symptoms, so common, as the result of the practice of considering sprains as slight and unimportant injuries.

The definition of a sprain as given by Webster —the weakening of the motive power of a part by sudden and excessive exertion—describes both the manner of production of the injury and the result produced, but a more accurate and better definition is that given by Mr. Edward Cotterell, in his little book on "Some Common Injuries to Limbs." He says: A sprain includes all injuries to a joint and its surrounding structures produced by a sudden twist, but stopping short of dislocation.

Many degrees of severity may exist, and the classification adopted by S. L. McCurdy, M.D., in an article on "Sprains and their Treatment," which appeared in the *Columbus Med. Journal* for January, 1891, is a very good one.

He divides them into three classes. In the first there is simply a contusion of synovial membrane and a stretching of the soft parts; in the second there is a rupture of the ligaments and synovial sac; and in the third "sprain fracture" —the ligament, instead of tearing, pulls off a thin layer or slice of bone. This accident, though infrequent, perhaps might best be considered under the head of fractures.

A better method of studying the cases, seems to me to be that adopted by Mr. Moullin in the monograph previously alluded to, and its perusal will repay those interested in the subject.

He discusses the effect produced on each tissue by such injuries, and the mutual sympathy of all the parts. The ankle-joint is particularly liable to sprains, its normal movements being flexion and extension, in alighting upon uneven surfaces, whether from a height or from some moving body, as a car, wagon, etc., unless the foot is evenly placed, the weight of the body being suddenly thrown on the joint, causes the foot beneath it to twist, and a violent wrench or sprain ensues. Severe pain is felt, in most cases limited to the parts near the ankle, in other cases extending up the limb. In the most severe cases, a condition of shock may even result, and the entire nervous system apparently becomes deranged.

Moullin says: The pain when ligaments are torn is usually described as sickening in character, and those who have once felt it, rarely fail to recognize it a second time. If a muscle is strained, there is generally a peculiar sensitiveness of the skin, most marked over its points of attachment to the bones or tendons. Slight touching of the part may cause exquisite pain, yet firm pressure may be well borne.

When the muscle is torn across, either partially or wholly, there is a sharp pain, like that of a blow with a whip or a cricket ball, so that the patient may turn around to see who has struck him before he is aware anything has given way;

and then, as the swelling begins, this is followed by a feeling of stiffness and soreness, severe even when the limb is at rest, but so much worse when an attempt is made to use it, that the patient can often hardly be induced to try. Similar pain occurs when a muscle is dislocated, and after the restoration there remains a sensation of soreness, with a tender spot corresponding to the slip displaced. These tender spots may remain for a long time in the ankle, if a lateral ligament has been torn away from the bone—but allowance must be made for those that are normally present when a joint is hurt. What they are caused by is not always certain, but as a rule they correspond to points where the capsule is thin and flexible and not far removed from the surface, so that pressure falls directly on it. At the ankle there is generally one on the front of the joint, rather to the outer side of the middle line.

Swelling more or less severe follows. The joint may become distended with synovial fluid, or blood may become extravasated into it. The appearance of the swelling may be very rapid, in many cases extreme, and followed by inflammatory symptoms—increased local temperature and redness, later on perhaps followed by an increase of the body temperature, if the inflammation be very severe. Motion of the affected joint may be slightly diminished, or even entirely lost, spasm of the muscles in proximity to it occur, and motion is thus limited, or the patient may voluntarily contract the muscles, from fear of being hurt, and thus produce spasm. Staining occurs at or near the site of injury, due to the extravasated blood, the color varying according to amount extravasated and the time it it is seen after the infliction of the traumatism. If the bursa is injured, a teno synovitis or bursitis may follow, characterized by the presence of fluid in the bursal sac, and in some cases, later on, by adhesions. The close resemblance of these sprains to many dislo cations is clear when we recognize, as was done by Vidal de Cassis, that they are really the same thing, only that reduction has taken place spontaneously.

Having thus briefly considered the pathology and symptoms, the question of treatment should not be a difficult one.

If we recall the anatomy of the ankle, we find that it is superficial, not covered with much fatty or muscular tissue, surrounded by ligaments and tendons, and that the latter have reflections of the synovial-like membranes from their sheaths, forming bursæ. The indications are to give the injured parts support and rest, restore the joint functions and prevent inflammation.

It is of course understood that a careful differential diagnosis must be made. The sooner the case is examined after the injury the better. Fractures and partial dislocations, bone or joint disease, must be carefully excluded.

If any doubt exist, give the patient the benefit of that doubt. Do not hesitate to give an anæsthetic if, for any reason, careful and satisfactory examination cannot be made without it. This is of great importance from a medical as well as a legal standpoint, as a case of Pott's fracture or fracture of tibia, fibula or tarsal bones, if treated as a sprained ankle, might cause serious trouble. These mistakes should and can be avoided. When the lesion has become chronic, the diagnosis is often difficult, and bone disease is easily mistaken for chronic sprain of the ankle, but we are supposed to be dealing with the acute or recent cases. How best to fulfil the indications of treatment depends somewhat on the individual case and the facilities at hand. Rest of the part with preservation of its function, seems to me best accomplished by means of a dressing of adhesive plaster which I call the Cotterell dressing, as Mr. Cotterell was the first to use it in sprains of the ankle, although the idea was suggested to him by Mr. Wharton Hood (*Lancet*, Vol. ii, 1884, p. 728), for the treatment of what is known as lawn tennis leg. The limb is elevated, to assist in reducing the swelling, then strips of adhesive plaster, each 1½ inch in width, and of the length adapted to the foot and ankle joint, are applied, somewhat as strapping is applied in the treatment of chronic ulcers of the leg. It is not advisable to use strips narrower than one inch, as they may cut the parts by a curling up of edge of the plaster. Over this a firm roller bandage is applied, and the patient is directed to get up and walk. The adhesive plaster causes a firm and even compression of the parts, acts as a light splint, prevents exudation and permits motion, which in the mild cases is desirable. The patient may come into the office limping and heavily leaning on a cane, and yet after the application of this dressing, if he is once persuaded that motion will not injure his joint, he is enabled to dispense with the cane, and in a short time walk with comfort. In one case a policeman weighing 280 lbs., although he had not stepped on his foot for three days after a severe sprain of the ankle, was enabled to return to duty within six hours after its application. This treatment is recommended where the injury simply consists in a wrenching of tissue and a contusion of synovial membrane.

In the more severe injuries when ligaments are torn across, muscles ruptured, synovitis or bursitis present, the parts should be strapped, and then foot and ankle encased in a plaster of Paris or silicate of soda splint. Care should be taken that the foot be put up at a right angle with the leg, and in a position of varus, not of valgus. The strapping in all cases should be renewed in a few days, as, when the swelling subsides, it becomes loose. The plaster of Paris must not be left on too long, as when acute symptoms subside motion is desirable, to prevent adhesions

and stiffness of the joint. If extreme swelling or inflammation have occurred before case is seen, then heat, cold, the various antiphlogistics, may be used, and after these massage and electricity. Support is needed as long as there is swelling or marked tenderness.

It is not intended in this paper to discuss the subject exhaustively, but rather to call attention to the fact that sprains of the ankle, even of slight degree, are worthy of careful treatment, and that, in my opinion, the Cotterell dressing is the best form of treatment in the mild cases, and the Cotterell dressing and plaster of Paris in the more severe.

THE RELATION OF CALCULI TO MALIGNANT DISEASE OF THE LIVER AND KIDNEYS.

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May 5-8, 1891.

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Since it has become the established surgical method to explore the abdomen in case of doubtful diagnosis, we have definite scientific knowledge, which can often be used for the well-being and safety of the patient while alive, instead of merely adding to our stock of post mortem information. Among other beneficent results to which we have fallen heir is the improved surgery of the liver and kidneys. In the performance of these operations, many surgeons have noted the frequency of the correlation of biliary and renal concretions with malignant disease. The following case will illustrate the subject to which I desire to direct attention in the present paper.

Mrs. ——, age 65, had from time to time for six months before my attention was called to the case, attacks of biliary colic. Her physician had given the usual treatment, such as olive oil, etc., with the alleged result of causing the evacuation of several "rather soft" gall-stones. (I have never had any reason to think olive oil any better drug than any other substance capable of being saponified, or otherwise causing fatty or soapy masses to pass per anum resembling gall-stones).

At last, after much delay, and the advent of grave symptoms of collapse, the patient was referred to me for operation. There was slight jaundice, the urine highly colored with bile, and the usual stools seen where there is absence or deficiency.

There was some enlargement of the liver just over the gall-bladder, and some emaciation of the patient. Diagnosis, gall-stones, with probable malignant disease. The operation was a very simple one. As soon as the peritoneum was opened, and before a sponge could be securely placed in position, an abscess opened and poured out two or three ounces of offensive pus. The malignancy was beyond doubt, and quite a number of gall-stones were quickly removed, although no time was lost in searching for them. The peritoneum was stitched to the abscess wall, thus securing the peritoneal cavity from infection for the time, and a drainage tube and dressing completed the operation. The patient was quite comfortable after the operation, not even requiring morphia, as she had done previously. She lived very comfortably for three weeks, and died of uncontrollable hæmorrhage from a vessel deeply seated in the liver. This case, and several autopsies where a similar condition was found, have led the writer to a study of these phenomena, and the points at issue are these :

Are calculi a cause of malignant disease, or are they a result ?

Is their presence merely a coincidence ?

Or are calculi very often present without giving rise to symptoms, or disease, and only found post-mortem ?

It is quite possible that vague and indefinable symptoms, very often reflex in their manifestations, leave us in doubt as to their significance.

That there is an element of truth in all these statements is beyond question. It has been shown by several authorities that the kidney is not so frequently invaded by malignancy as a result of calculous disease as is the liver. For instance, Ralfe gives "renal calculi" a cause of cancer, as we often find renal concretions in cancerous kidney, though it is certainly not such a frequent clinical sequel as is the case in biliary disease.

A clinical instance is given by Dr. Norman Moore (*London Path. Soc. Rept., 1882*) ; also an instance by Mr. Pollard in same Trans. for 1885 (*Ralfe, Dis. of Kidney*).

In St. Bartholomew Repts. we find, Vol. XXI, a case reported of nephrolithotomy for calculous pyelitis, and after death not only an abscess, but epithelioma, was found, which was produced by the irritation of the calculus (*Newman, Surg. Dis. Kidney*).

The writer has notes of one case of chronic Bright's disease in which, at the autopsy, several calculi were found in one kidney. No positive symptoms of stone were recognized during the patient's life.

Dr. Bright early recognized the coexistence of renal calculus and cancerous disease. One report shows the finding of a lactic acid formation in one kidney, and an oxalic stone in the other.

Another case mentioned by Brodeur (*p. 170, Newman's Dis. Kidney*) : A female, æt. 36. R. Kidney tumor removed by abdominal method. "Patient died in two days. Weight of tumor, 1 lb. Pelvis and calicis contained calculi, although the microscopist said the disease began in the epithelial lining of the renal tubules."

Epithelioma appears to most frequently follow this form of irritation; at least, more frequently than other forms of cancer.

If evidence is given that the kidney is probably the seat of cancer as a result of calculous irritation, we are abundantly able to show that the liver is much oftener attacked by malignant disease than these organs. In Guy's Hospital Reports for 1875, Dr. Hilton Fagge reports forty-two autopsies, covering a space of fifteen years, showing an intimate correlation of calculi and carcinoma. He says: "But the way in which death is most frequently brought about in persons who have gall-stones is by the development of cancer about the gall bladder or the bile ducts. Within the period of twenty-one years already referred to there have been at least twelve cases in which gall-stones being present, there has been likewise malignant disease of these structures. In some instances, the clinical history has pointed distinctly to the view that the jaundice was originally due to an ordinary attack of biliary colic, and that the development of cancer was secondary. Indeed, one case seems to admit of no other interpretation. (The case is given at length.) But in the great majority of cases in question, no gall-stone has been impacted in the duct at the seat of the cancer. The concretions have been found in the gall-bladder itself, which has often contracted round them, and empty, or containing only a little purulent mucus. Thus it appears probable that if the malignant growth had not developed, all the symptoms would have subsided, and the health of the patient would have been restored. All observers, indeed, are not agreed that the cancer of the bile-ducts arises secondarily when it is found in association with gall stones. It has been urged that the gall-stones are often discovered in the bodies of those who have died from cancer of the breast or of other organs. This may be merely a coincidence, for both cancer and gall-stones are especially apt to occur in persons advanced in life. However, even if some deeper relation than at first sight appears probable should be proved to exist between the formation of biliary calculi and the development of cancer in the body generally, this would not do away with the clinical significance of the facts stated above; it would still remain true that when a patient who has had attacks of biliary colic dies of protracted jaundice, the ducts are almost invariably found to be affected with cancer." . . . "Statistics show the jaundice as a symptom of cancer is just twice as frequent as owing to gall-stones." Dr. Markham (*Harley, Dis. Liver*) reports a case which was supposed to have been pyloric disease. Patient, age 28. Intense jaundice; pain; vomiting after eating; urine deeply colored with bile; no bile in stools. At autopsy the gall-bladder was found converted into a large and solid mass of scirrhus, which commenced in the coats of the viscus itself. In the center of the mass was found a number of gall-stones, which were supposed to have to do with the formation of the cancerous deposit.

Dr. Coupland (*Trans. Path. Soc., Lond.*) reports another case in a woman, æt 56. A large number of calculi were found in the center of a malignant tumor. Dr. Harley mentions another case reported by Dr. Norman Moore, occurring in a woman aged 59. One case appears to have been attributed to the operation of gastroenterotomy.

Harley says (*Dis. Liver*): The liver and gall-bladder are alike subject to irritation and cancer resulting from gall stones. Gall-stones apparently, indeed, not only give rise to serious organic changes in the wall of the viscus, such as inflammatory thickening, and hypertrophies, but to the formation of new growths in the shape of benign, scirrhus and malignant encephaloid tumors. After mentioning a case of acute yellow atrophy of the liver, associated with biliary calculi, Murchison says, p. 271, ed. 1877: "It is remarkable that most of these cases (alluding to secondary cancer of the bladder from extension of the disease from liver and pancreas, more commonly commencing in the gall-bladder, and secondarily affecting the liver and peritoneum), the gall-bladder contains calculi, and the cancer appears to be the sequel of gall-stones. Not infrequently there is a history of biliary colic. (P. 372). The passage of a gall-stone, with or without hæmorrhage from the bowels, concurring with a tumor, would corroborate rather than refute the diagnosis of cancer." Murchison gives histories of cases in support of this opinion. These cases support the view announced by Dr. Fagge, "that there is frequently a history of biliary colic preceding the onset of cancer."

Authorities differ greatly upon the question of the relation of carcinoma to gall-stone formation. Until recently, most observers were inclined to look upon the cancer, or the cancerous diathesis, as the cause rather than the effect of the calculi. Several recent clinical observations would appear to confirm the belief that calculi may be the irritating cause in some cases. Quetsch (p. 39) relates the history of a female patient who had a biliary fistula opening upon the surface, the result of a long-standing calculous disease. Some of the calculi did not pass through the fistula, and carcinoma of the gall-bladder, which developed, was attributed to the irritation produced by their presence in the organ. The article in *Buck's Ref. Hand-book Med. Sci.* clearly favors the above view. Frerichs notes the coincidence of cancer of the biliary system and calculi, having, in eleven cases, found calculi nine times. This subject has claimed some attention from clinicians and pathologists for many years, but there are few, if any, authors who have attempted

to collect a résumé of the literature of the subject.

Dr. Arthur Willigh (*Virchow's Arch., 1869*) reports one case. A writer in the *Balletino delle Scienze Mediche di Bologna*, 1871, adds his voice in favor of the above views, and gives a case occurring in a woman aged 48. Dr. Kraus, of Carlsbad, mentions a case of primary cancer of ductus cholodochus produced by the wedging of several stones in the canal. (*Prag. Med. Woch., 1875.*) Dr. Harley mentions one reported by Dr. Vanderbye. (*Path. Soc. Trans., 1858.*) A woman, age 64, having extreme liver disease of malignant character, with neither jaundice nor anasarca, and with forty gall-stones in her gall-bladder.

The fixed idea that injuries of the liver may cause the development of cancer, if true, gives color to the possibility of cancer being caused by calculi. Harley strongly presents this view, that either injury or irritation of the nerves or tissue of the liver is a far more frequent cause of its malignant degeneration than the majority of physicians suppose. Just here I would mention that, as it is generally supposed that jaundice is nearly always present in malignant disease of the liver, statistics seem to show that in only a small proportion of all cases is it present save in last stages of the disease. It is also further worthy of remark that many cases of gall-stone are present with jaundice without cancer in proportion of two to one. Among American writers I find but little said upon this subject. Dr. Ransdorf and Dr. Musser, of Philadelphia, are exceptions; both indorse the views of authorities quoted in this paper. In closing, I do not think it important to comment upon the remaining phases of the question as to the cause of cancer, as, for instance, the cachexia of cancer favoring the formation of gall-stones. The study of reported cases shows plainly the deposit of cancer formation as a result of mechanical irritation, of which there are instances in other parts of the body. We have not lost sight, however, of the possibility of cancerous obstruction adding to the possibility of calculous formation, although we incline to the idea that the slow formation of calculi must date far beyond the period when the fatal obstruction from cancerous deposit occurs.

(*Note.*—Since the meeting of the Association, the following notes have been prepared, to be added as a postscript):

W. H. Larmond, in *Le Prog. Medical, 387, 1882*, reports a case of biliary calculus, grave icterus, and cancer of the liver. Patient's age, 75. Several calculi size of filberts.

H. Zenker, *Deut. Arch. f. Klin. Med., Band xiv.*, says of the method of transformation to cancer: "The malignant process in these cases starts in much the same manner as does a cancer of the stomach from the edges of a benign ulcer." Zenker was able to find, on microscopic examination, that cicatrices of the gall-bladder, caused by the presence of gall-stones, were accompanied by an outgrowth of epithelium not only from the gall-bladder, but in the adherent parts, such as the transverse colon, or the common bile-duct. Where the points of transmission lie between such a typical epithelial growth and the commencement of actual cancer it is not possible to say. The author holds that the passage from one to the other is gradual, and that old age is a predisposing cause.

In *Trans. Med. Soc., Lond., vol. xli., 1889–90, p. 40*, Dr. H. Handford communicates an interesting history of a female patient, age 55, who had cancer of the portal fissure of the liver, jaundice, impacted gall-stones, combined with interstitial hepatitis (atrophic cirrhosis). Very many gall-stones were found in this case. The points of special interest were these:

1. The association of carcinoma with impacted gall-stones. The author well says: "This is not very rare, although not so common as the association with non-impacted stones."

2. The presence of multiple strictures of the intestine. Neither excision of the rectum or inguinal colotomy would have given much relief in this case, because of the obstruction higher up.

3. The association in the liver of interstitial hepatitis with disseminated carcinoma.

1309 H street, N. W.

SUPRA-PUBIC CYSTOTOMY.

Read in the Section of Surgery and Anatomy at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY JOHN A. WYETH, M.D.,
OF NEW YORK.

The personal experience upon which this report is based embraces twenty-three operations, in all of which recovery ensued. They may be, for purposes of study, divided into:

1.	Tumor of the bladder	6 cases.
2.	Tumor of the bladder, with stone	2 "
3.	Stone (without tumor)	3 "
4.	Foreign body	1 case.
5.	Cystitis, without tumor, stone or foreign body (one case with fistula)	11 cases.
		23 cases.

1. TUMORS.

Case 1.—Male, aged 40. Operation July 7, 1888. Seven months before, hæmaturia, chills and fever. Diagnosis, cancer of bladder. Large epithelioma removed. Drainage tube removed eighth day. Urine ceased to escape through wound on sixteenth day. Recovery. Improved. Six months later, death from general metastasis and exhaustion.

Case 2.—Male, 36 years old. Operation July

20, 1888. Small benign sessile tumor removed from floor of trigonum. Drainage tube removed sixth day. Wound closed on eighteenth day. Recovered. Cured.

Case 3.—Female, 20 years old. Small, pedunculated, benign tumor at commencement of urethra, forming ball-valve, and stopping free outflow of urine. Operation March 26, 1889. Wound in bladder closed at once. Catheter per urethram ten days. No leakage. Recovery.

Case 4.—Male, 54 years. Operation October, 1889. Tumor of bladder just behind urethral opening removed (third lobe of prostate). Drainage for eight days, and wound closed. Recovery.

Case 5.—Female, 42 years. Operation December, 1889. Valve-like fold of hypertrophied or thickened mucous membrane partially closing outlet of bladder. Removed. Wound in bladder closed at once by suture. Recovery. Cured.

Case 6.—Male, 62 years. General hypertrophy of prostate, enlargement of middle and both lateral lobes, chronic cystitis for three years, and with partial paralysis of bladder from over-distension. Operation November 12, 1890. Recovered, much improved. Permanent drainage necessarily established.

2. TUMORS COMPLICATED WITH CALCULUS.

Case 1.—Male, 67 years. Operation September 4, 1888. Tumor of prostate and calculus removed. Tube removed sixth day. Wound closed by sixteenth day. Recovery. Cured.

Case 2.—Male, 48 years. Operation September, 1889. Tumor and calculus removed. Drainage for about ten days. Recovery. Cured.

3. STONE UNCOMPLICATED EXCEPT WITH USUAL CYSTITIS.

Case 1.—Male, 46 years. Operation September 28, 1888. Large stone removed. Tube discontinued eighth day. Fistula persisted for four weeks. Scraped this out and it then closed. Recovery. Cured.

Case 2.—Male, 60 years. Operation December, 1889. Piece of catheter four inches long, thickly incrusted with urine salts, removed. Tube discontinued fifth day. Recovery. Cure.

Case 3.—Male, 16 years. Operation March 9, 1890. Oxalate of lime stone about one inch and a half in diameter removed. Drainage five days. Wound closed on fifteenth day. Recovery. Cure.

4. FOREIGN BODY (UNCOMPLICATED).

Case 1.—Male, 41 years. Operation July 25, 1888. Piece of metal catheter removed. Tube discontinued fifth day. Wound closed fourteenth day after operation. Recovery. In this case, immediate suture would have been permissible.

5. CHRONIC CYSTITIS WITHOUT TUMOR OR STONE.

Case 1.—Male, 40 years. Operation December, 1888. Drained three weeks. Wound closed gradually. Recovery.

Case 2.—Male, 68 years. Old persisting fistula from former operation with cystitis. Fistula opened up; scraped out; wound allowed to close. Recovery.

Case 3.—Male, 54 years. Cystitis after previous operation. Usual drainage. Recovery.

Case 4.—Male, 4 years. Cystitis, with paralysis due to compression of cord. Tube removed fourteenth day. Wound closed gradually. Recovery.

Case 5.—Same patient. Drainage reëstablished by operation, and prolonged. I opened the spinal cord, evacuated abscess of the cord, and cured the paralysis in this case. Recovery.

Case 6.—Male, 24 years. Cystitis for eighteen months. Operation March 14, 1890. Drainage three weeks. Recovery.

Case 7.—Male, 36 years. Cystitis for one year. Operation March 28, 1890. Drainage two weeks. Wound closed in four weeks. Recovery.

Case 8.—Male, 58 years. Impermeable stricture of urethra and cystitis. Drainage for six weeks. Patient had cerebral hæmorrhage, and died eight weeks after the operation from compression of brain. Cystitis was cured at time of death.

Case 9.—Male, about 45 years. Complete paralysis of bladder, and cystitis. Permanent drainage. Recovery.

Case 10.—Male, 59 years. Chronic cystitis and neuralgia of the vesical neck and prostate. Operation January 28, 1891. Drainage tube removed fourteenth day. Small area of thickened mucous membrane over trigonum removed. Wound closed gradually. Cystitis relieved. Neuralgia not benefited, and patient, May 5, 1891, at home, but still a sufferer from prostatic neuralgia.

Case 11.—Male, 63 years. Operation March 9, 1891. Tube removed fourteenth day. Wound about closed April 22, when patient was last seen. Recovery.

The operative technique is as follows:

The preparatory treatment consists in emptying the alimentary canal by laxatives and enema. The pubes and perineum should be shaved before the anæsthetic is given. After narcosis is complete, the patient should be placed on the back, the pelvis about six inches higher than the head, so that the contents of the abdomen may gravitate toward the diaphragm. A soft catheter is inserted, and the bladder filled with eight or ten ounces of warm Thiersch's solution, which is allowed to flow out through the catheter, and this is repeated until the fluid escapes fresh and clear. Finally, about ten ounces of this solution are injected, the catheter withdrawn, and the urethra closed by ligation of the penis with rub-

ber tubing. In females the bladder is kept full by digital pressure of the urethra against the arch of the pubis, or by plugging.

In cutting into the bladder, the point to be made for is the upper surface of the symphysis pubis. The incision usually extends about two inches above and an inch below this point. In very fat subjects it may be more extensive. It should be exactly in the median line, through the skin and muscles. It is usually an advantage to snip the muscles from the upper margin of the pubic bones for a half inch on either side. In case a large tumor or stone is encountered, this lateral incision may be enlarged to within one-half inch of the inner pillar of the external abdominal ring. The supporting power of the muscles is not permanently impaired by this section, which is best made with curved, dull-pointed scissors, and by cutting close to the bone all bleeding may be avoided. By retraction of the parts divided, a varying quantity of fat (the pre-vesical fat) is encountered lying on the anterior wall of the bladder and in contact above with the inferior fold of the peritoneum. With the finger nail (or, if necessary, the dull scissors) this fat is separated from the slight attachment to the inner surface of the ossa pubis, and also lifted upwards by the same means from the anterior bladder wall. In this manner the bladder is exposed for about two inches in its perpendicular axis, and the peritoneal fold is carried up with the fat, and is, as a rule, not seen. Only once or twice have I seen the peritoneum in my operations. The bladder is now in plain view, and the line of incision into the viscus is in sight. If any large veins are seen, and these are so located that their division is unavoidable, they should be tied with catgut passed beneath them, but not into the cavity of the bladder, by a small, curved Hagedorn needle. In order to keep control of and to support the bladder after its contents escape, and to serve as a guide to the introduction of the finger or any instruments, on either side of the proposed line of incision, a silk thread is inserted into the wall of the bladder by means of the Hagedorn needle. The thread being inserted, the needle is unthreaded, and the ends tied about one foot from the wound, leaving a movable loop. Everything is now ready for cutting into the bladder. A long, blunt retractor should be inserted on either side to hold the soft parts back, while a third shorter one draws the pre-vesical fat apart, and with it the peritoneum. The silk loop being sufficiently tightened, a short knife is carried, the back downwards, in contact with the inner surface of the ossa pubis, until the point strikes the bladder about one-half inch below the level of the symphysis, when it is pushed through the anterior wall, which is rapidly incised in the median line upwards for one or two inches. As the injected solution escapes, the finger is introduced and a thorough exploration effected. If for any reason the bladder is deeply sunk in the pelvis, the Barnes dilator may now be inserted per rectum, filled with 4–5 ounces of warm water, and by this means the floor of the bladder is lifted toward the wound. I have not had to resort to this expedient in more than three instances.

If a stone or foreign body is present, it may be removed with a light forceps or the finger. I find the index finger answers better than any instrument. When a tumor is present, it is easily recognized by the touch. The most satisfactory instrument for removing tumors of the bladder is a small fenestrated Spencer Wells ovarian sac clamp, the teeth of which have been filed off. With the finger tip resting on the tumor, the instrument is carried down with one jaw on either side of the finger until it slips from the finger tip on to the neoplasm. It is then pushed snugly on to the mass, the jaws closed, and the instrument twisted around and around until the tumor is twisted off. Any particles which may remain are in like manner removed. The retractors are now carried into the bladder, and thus stretching the wound wide open, will permit thorough sponging of the cavity and an ocular inspection of the walls. The Pacquelin cautery point may now be introduced, and the base of the neoplasm seared over. While this is not essential in ordinary prostatic hypertrophy of the middle or lateral lobes, it is imperative in malignant neoplasms and in papillomatous growths. If hæmorrhage is severe, it may be controlled by compression with warm sponges, or by water at 110–115° F. The after-treatment of the bladder will depend upon the condition of this organ. In all cases where cystitis exists from stone, foreign body, tumor or other cause, drainage is indicated, and, of course, where the urethra is impermeable or the bladder paralyzed, it is imperative. When no cystitis is present, it is advisable to close the wound in the bladder wall at once.

In only two of the twenty-three operations was an immediate suture undertaken, and in these cases the wound closed promptly without leakage. Both were in women.

A short, curved, small Hagedorn needle is armed with small, firm catgut (juniper oil gut is preferred). The edges of the incision in the wall of the bladder are brought up into the incision through the abdominal wall by traction on the silk thread already introduced, or by tenacula, and the sutures introduced in this manner. About $\frac{3}{16}$ of an inch from the edge of the incision the needle is carried into the wall of the bladder —*not through it*—and is made to emerge on the cut surface just where the mucous membrane rests on the muscular layer. It enters on the same level on the opposite side, and is carried out at the same distance from the edge of the

incision. The space between the sutures is from ⅛ to 1/16 of an inch. When all are inserted, they are tied and cut ½ inch from the knot. The abdominal wound may now be stitched a short distance from its upper and lower angles, but as much as corresponds to the line of sutures in the bladder, is left open. A careful disinfection is now made, and the wound snugly packed with iodoformized gauze; bi chloride dressing over all. Should leakage occur, the open wound prevents all danger. A soft catheter should at once be inserted into the bladder by the urethra, and tied in. After three or four days, should irritation of the bladder or urethra supervene, it may be removed and reinserted at intervals to draw off the urine. In from seven to ten days the wound will be united sufficiently to permit the patient to empty the bladder at will. It is of great importance, however, that no urine should be allowed to accumulate within the first three or four days for fear of separating the edges of the wound.

In the majority of cases operated on, I have employed temporary drainage, and in two cases permanent supra-pubic drainage was established.

Temporary drainage is very satisfactorily secured by the Trendelenberg T tube, made of ordinary white rubber drainage tube, with a lumen of about ¼ of an inch. This tube is about ten inches long, one end being carried through a split in the center of a smaller piece of tubing about two inches in length, which is securely stitched to the larger piece. A single good sized hole should be cut in the larger tube just at the level of the cross piece. In inserting this tube, the cross-piece or top of the T should be folded back in the jaws of a pair of dressing forceps, and carried down to the bottom of the bladder, when, on loosening the forceps, the cross piece springs out and prevents the dislodgement of the tube. A final flushing of the bladder with boro-salicylic solution is now made, and the wound about the tube snugly packed with iodoform gauze. In doing this, while the tube should not be closed by pressure of the packing, it should be tight enough to keep air out of the bladder so the siphon-action of the tube may not be interrupted.

A smooth, well-adjusted piece of glass tubing about four inches long is now inserted into the rubber tube, and to this a long piece of rubber tubing is attached, the end of which leads into a vessel beneath the bed. To start the siphon-action the tube needs to be partially filled with water, after which the end is lowered, the water flows out, and the contents of the bladder follow. The outflow can be regulated by compression of the tube with a safety-pin, so that it falls into the vessel drop by drop just as fast as it is discharged into the bladder from the ureters. The patient for the first few days rests upon the back. The coil or loop of the drainage tube should be secured to the dressing and the edge of the bed by safety-pins, so that it may not drag upon the wound. Should the tube become displaced, it may be reinserted, using the two silk loops left in the wall of the bladder on either side of the wound as guides.

Properly managed, the drainage by this method is perfectly satisfactory. I have had patients thus treated in whom the dressings did not get wet or have to be changed oftener than once in four or five days. There is no need, in my opinion, of an additional operation through the perineum to secure drainage by gravitation. At least, I have not felt the need for this method in any of my cases. The length of time the tube remains in the bladder will, as has been said, depend upon the condition of this organ. When the operation is done for removal of recent foreign body, or of a small tumor which has not caused cystitis and does not bleed much after removal, immediate suture of the bladder is indicated. When only moderate cystitis exists, should the urine clear off nicely in from three to seven days, the tube may be withdrawn. When this is done, a loose dressing of gauze and cotton is laid over the wound to absorb the urine which wells out. This will have to be changed at frequent intervals. In a few days the urine will partially flow out through the urethra, and by the end of from two to six weeks all will be discharged by the natural way.

Occasionally a small fistula may persist, which will require either to be packed with iodoformized gauze or scraped out with a Volkman's spoon to insure its closure. In paralysis of the bladder, and in certain cases of obstruction either in the urethra or by hypertrophy of the prostate in which the bladder has lost so much of its tone that it can only empty a portion of its contents, leaving the remainder to press upon the rectum and to produce cystitis and discomfort, permanent supra-pubic drainage is indicated. This is best accomplished by a velvet rubber catheter arranged so that the eye-end, passed through the wound, rests easily upon the floor of the bladder. On the skin at the outer end of the fistula rests a shield of soft rubber, about 1/16 of an inch in thickness and 1½ × 3 inches surface measurement. It is held firmly in place by four pieces of tape attached to the four corners of the shield and tied two around the waist and two beneath the groins. The soft catheter is firmly moulded or soldered to the shield. In its outer end a small cork is inserted. As the urine collects sufficiently to demand evacuation, the bladder forces out a portion, and as soon as it ceases to exert power enough, the cork is removed from the catheter and the residue is then siphoned out. Patients wearing this tube enjoy great relief over their former condition, and can attend to work or social duties in comparative comfort.

In the present condition of my knowledge on this subject, I am deeply impressed with the safety and value of the *high operation*. For the thorough digital exploration of the bladder it is superior to *perineal cystotomy*.

The same is true beyond all question in the removal of tumors.

For drainage of the bladder, whether temporary or permanent, it answers every purpose.

For removal of stone or foreign body, to my mind it is so easy, safe and satisfactory that I prefer it to the low operation. In the light of my personal experience, I do not see why suprapubic cystotomy should not supersede all other methods of cutting into the bladder.

REPORT OF A CASE OF EXTRA-UTERINE PREGNANCY. RUPTURE INTO THE PERITONEAL CAVITY AT ABOUT THE FIFTH WEEK; OPERATION THREE WEEKS AFTERWARD. RECOVERY.

Read by Title in the Section of Obstetrics and Diseases of Women, at the Forty second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY RUFUS B. HALL, M.D.,

OF CINCINNATI, O.

SURGEON TO THE CINCINNATI FREE HOSPITAL FOR WOMEN; CLINICAL LECTURER ON GYNECOLOGY AT THE MIAMI MEDICAL COLLEGE ETC.

Mrs. M., aged 30, of Winton Place, married nine years, mother of three children, the youngest 5 years old. Three years ago had an abortion and some septic trouble following, since when she has had some pelvic trouble, and been under the care of several physicians. For the past year her health was somewhat improved, yet she was not well. December 29 the menstrual flow commenced, which was the twenty-eighth day. The flow stopped January 3, and was normal in every respect. February 1 she commenced to menstruate, and the flow continued seven days, but it was different from former periods, inasmuch as the flow continued an hour or two or half a day, and then stopped several hours, and during the whole period she suffered more pain than ever before during menstruation. From the 7th to the 12th she was quite free from pain, but on the 12th she had cramping pain in the lower part of the abdomen, coming on after a walk of some distance. This pain was quite severe, and grew gradually worse until the 15th, when the family physician, Dr. R. H. Whallon, was called on account of the pain in the abdomen, which was now very severe. The doctor visited her daily for four days, at which time she appeared to be convalescent, and said she was free from severe pain. She remained quite comfortable, requiring no medicine to relieve pain, and on the 22d she took a drive with some friends. On the 23d, when in conversation with her mother, she suddenly grew very pale—this was so marked that it alarmed her friends, and they requested her to lie down. Although she had no severe pain at that time, yet the whole abdomen was sore and tender. The night of the 24th the patient got out of bed to use the commode, and fainted twice before her husband could get her on the bed again. She was never able to get up after that date until after the operation was made. After the 24th of February she had more or less pain all the time, with a sense of discomfort in the abdomen. March 1st to 7th she had a simulating menstruation discharge, and discharged shreds of decidua. March 8 there was first observed an enlargement in the left side of the abdomen, as large as the closed hand, which gradually increased in size. March 11 Dr. William H. Taylor was called in consultation, and diagnosed extra-uterine pregnancy, with rupture into the left broad ligament. On the 13th, Dr. E. W. Walker saw the case with Dr. Whallon, in Dr. Taylor's place, as the latter gentleman was unable to attend. On the 15th I saw the case with Drs. Whallon, Taylor and Walker. At that time there was an enlargement in the pelvis and left side of the abdomen as large as an adult head, which could be plainly outlined, extending diagonally across the abdomen from about two inches below border of the false ribs on left side, to midway between the anterior superior spine of the ilium and the pubic spine on the right. The uterus was in front of the mass, and pushed to the right side of the pelvis. The diagnosis of extra-uterine pregnancy with rupture into the folds of the broad ligament, which had been made four days previously, was believed by all present to be correct. But as the mass was increasing in size, and the patient losing strength, it was believed that an intra-peritoneal rupture would probably soon occur; therefore an immediate operation was advised. After a few hours to consider it, the family decided to have it made, and it was performed on the morning of the 16th. Present and assisting, Drs. Whallon, Taylor, Walker and Colter. When the cavity was opened, we came upon a mass in the abdomen which proved to be blood clot, as thick as jelly, and almost as black as tar. I felt first for the uterus, making certain that my hand went down upon the right side of that organ; by so doing I felt that I could better outline the parts, and as soon as the hand could be made to glide over the fundus I could at once grasp the tube near the uterus, on the side of rupture, and thus control hæmorrhage. By this method, I did not lose any time in definitely locating the parts. I first attempted to bring the tube into the incision, but the decidua became detached, and with some blood clot was removed. I at once secured the tube which formed the sac and tied it off. I now turned my attention to cleansing the abdominal cavity from blood clot, of which

there was an incredible amount, estimated to be about 4½ pints. After thoroughly irrigating the cavity and placing a drainage-tube, the cavity was closed. The patient recovered without incident, and was able to sit up on the twentieth day after the operation. It is very difficult to say whether the rupture occurred on the 15th or the 24th of February, but it is a matter of scientific and practical interest to settle as near as possible; this, however, can only be approximate in this case. We are certain that it occurred as early as the 24th, if not on the 15th, and I am very strongly inclined to the opinion that it occurred at the time of her first severe pain, on the 15th.

It was probably the loss of blood that caused her to faint on the 24th. This belief is strengthened by the fact that on March 8 the abdominal enlargement was first observed, which would quite agree with the theory that the bleeding went slowly on during the interval, and the fluid portion being absorbed, leaving the blood clot, forming the enlargement. I recorded the case because these cases are always interesting, and to emphasize and illustrate a few facts in connection with this case which are of vast practical importance to the general practitioner and specialist alike. In this case there was not a single symptom or sign to lead one to believe that there was an intra-peritoneal rupture, yet the rupture was free under the peritoneal cavity, and not into the broad ligament, as we all believed before the operation. The pelvic floor was displaced downward, and the tumor was rounded and felt firm and fixed, as we would expect to find in a case of rupture into the broad ligament. This deceptive condition can now be explained in the following manner: The rupture occurred early at the end of the fourth or fifth week of gestation, near the middle of the tube, on its free border. This, at first, was probably quite small, and bled slowly, the more fluid portion of the blood being absorbed, leaving the blood clot, which the omentum and intestine became adherent to, closing off the greater portion of the abdominal cavity from contamination. As the bleeding continued, the intestine and omentum were crowded away from the left iliac fossa, but at the same time keeping the blood clot confined in that locality, thus making the apparent tumor. Adhesions of several weeks' duration were quite firm, and thus we can account for the depression of the pelvic floor simulating a rupture into the broad ligaments.

If we had waited for the absorption of that amount of blood clot, with the bleeding still going on, we would have lost our patient. The case demonstrates the difficulty attending a correct diagnosis as to intra- and extra-peritoneal rupture in extra-uterine pregnancy, as well as the danger of attempting the same—thus encouraging delay. We had in this case the very signs which are believed to be characteristic of rupture into the folds of the broad ligament, when it was really a rupture free into the peritoneal cavity, as the specimens plainly show. With these facts before us, after we have made our diagnosis of extra-uterine pregnancy, are we to stand idly by and wait until we are certain the sac has ruptured into the peritoneal cavity, in any given case, before we recommend an operation? This is a very important question, and one that is by no means settled in the professional mind, but the careful study and report of these cases will soon settle this difficult problem. I now believe, if the case comes under observation before the fourth month, it is our duty to give the patient the best chance for her life; and that is an abdominal section, and that without delay. I here present the specimens in these three bottles. In the first one you will see the left tube, dilated into a sac the size of a small orange, with a rupture in the free border. In the second bottle you will find the decidua and blood clot. This clot, with the decidua and fœtus, were in the tube at the time of the operation, and came away in my hand when I first attempted to bring the tube into the incision. The fœtus, which is in the third bottle, was afterward found in the blood clot by Dr. Taylor, and as you see, is less than one inch in length.

RUPTURED UTERUS. OPERATION AND AMPUTATION OF A SECTION OF INTESTINE. A UNIQUE CASE.

BY H. WARDNER, M.D.,
OF CHICAGO, ILL.

Trusting the following report may be of interest, I send it to THE JOURNAL, in the hope that if there is a similar case on record, or having occurred in the practice of any physician, it may come to light. So far, I have not been able to find one in medical literature, or in the experience of physicians with whom I have conversed on the subject.

On Sunday, August 11, 1889, I was requested by my friend Dr. Dodds, of Anna, Ill., to visit with him a patient in a neighboring village, a young married woman, who seemed to be suffering from a delayed miscarriage, about which there was something unusual.

From the doctor, the patient and her husband, who was also a physician, I obtained in substance the following history of the case: On Wednesday evening, the 7th, she was at Anna, where, in running to catch the train just starting from the depot, she jumped and partly fell in getting aboard the car. She "felt something give away," and an uneasy feeling followed, coupled with more or less pain. After reaching her home, she spent the time up to nine o'clock playing croquet, although the bad feelings con-

tinued. At or a little after midnight she was taken with regular labor pains. She had all the symptoms of a miscarriage—the uterine contractions, the show of blood, and the presentation of a membranous sac at the mouth of the womb. (She had had a miscarriage some months previously at about the sixth month of gestation.)

The symptoms continued, with a great deal of suffering, until the Friday following, when Doctor Dodds was called to the case.

He found, on examination, a stringy substance resembling a cord, with membranes, and a tumor at the *os uteri* similar to that of a breech presentation or a *caput succedaneum*. He saw the case again on Saturday, the 10th, and finding her no better, but worse, and becoming exhausted, sought further advice.

I saw her, with Dr. D., Sunday afternoon. We found her lying upon her left side, limbs drawn up, face pinched and drawn in lines, indicating great internal suffering. She was pale and sallow; pulse 90, quick and thready. There was no swelling or enlargement of the abdomen, but the abdominal walls were rigid, as though the muscles were in a state of tonic contraction. She had been vomiting a greenish fluid for two or three days. The stomach was very irritable, retaining but little food or fluid of any kind.

A digital examination revealed a membranous, stringy mass, attached to a tumor lying partly within the uterus, with the larger part protruding into the vagina. The sensation communicated by the touch was similar to that of an encysted fœtus of about two and a half months. She could not bear traction on this mass, saying "it hurt her stomach, and gave her severe pain in the head, which subsided as soon as traction ceased."

Upon examination with a speculum, and removal of the decomposing, bloody fluid present, that gave out a strong odor of the lying-in room, the stringy mass of tissue was seen to be in a sloughing condition, and very offensive. She was very sensitive to the manipulation. An anæsthetic was administered, when the mass was drawn down carefully and brought into view externally, when, to our great surprise, we discovered the form of small intestine. At this moment there was a discharge of a few drops of fæcal matter. The opening into the gut was found in both upper and lower fragments, a strangulated loop having sloughed away. The stringy mass was mesenteric, and the tumor was the congested portion of the upper fragment of the intestine lying in the vagina between the os uteri and the slough. It was evident a loop of the small intestine had come down through the fundus of the uterus into its cavity, and that the organ had contracted, as in labor, to expel the intruding mass, producing strangulation and sloughing as a consequence.

The prognosis was unfavorable, and an early fatal result expected.

The dead parts of the gut were excised, and the patient put upon anodynes, and all the bland nourishment the stomach would bear.

After two or three days of depression, and more of the intestine having sloughed away, there was an effort of the system toward a rally of the vital forces. She had one passage from the rectum, clearing the lower fragment of the tube, and the fæces from above passed per vaginam.

This condition gave rise to the faint hope that she might endure an operation for relief. Dr. John E. Owens, of Chicago, was called by telegraph, and came on the morning of the 20th. With him there were present at the consultation Drs. Ferrell, Vick, Dodds, Stocking, the husband of the patient and the writer.

The operation was decided upon, it being the only hope for relief, but with only a shadow of a chance for success.

The patient was placed on the table at 11:40 A.M., etherized, and Dr. Owen proceeded with the operation, assisted by the others present. The usual incision was made between the umbilicus and pubis. An abscess was found in the connective tissue between the bladder and the pubis. She had complained of vesical irritation and pain for three or four days. The ends of both fragments were found to be incarcerated in the uterus, and had become adherent to the walls of the opening through its fundus, so that it took considerable force to detach and remove them. On account of the doughy and lifeless condition, it was necessary to cut away three or four inches from each fragment. This involved, on the upper side, the removal of the ileo-cæcal valve and the lower end of the ascending colon. The ends were then stitched together by a combination of the Czerney and Lembert methods, the abdomen cleared and washed out with antiseptic solutions, and the wound closed; a drainage tube inserted through the uterus, and another left in the lower end of the abdominal wound.

The complications of the case made the operation necessarily tedious. About fifteen inches of intestine was lost by sloughing and excision.

The patient was placed in bed at 2:45 P.M., and died at 4 o'clock, one and a quarter hours later. There was no autopsy.

The severe pain in the head whenever traction was made on the protruding intestine is worthy of note as a means of diagnosis, should any one be so unfortunate as to meet with a similar case. All the other symptoms were those of a premature labor or a strangulated hernia.

What caused the opening through the uterine fundus? Possibly the wall was ruptured during the labor that occurred several months before. Possibly it was the result of an abscess. But I

have no satisfactory hypothesis to explain its existence.

If any physician knows of a case in medical literature or in practice similar to the above, he will confer a favor by informing me of it.

4106 Drexel Boulevard, Chicago, Ill.

TRANSLATION.

THE DIFFUSION OF THE POISON OF TETANUS IN THE ORGANISM.

At the meeting of the Societé de Biologie of Paris, June 27, 1891, M. Camara Pestana presented the following note:

The symptomatology of tetanus is the consequence of the absorption of a toxine produced by the bacillus of Nicolaier, the latter remaining localized at the point of inoculation, as has been demonstrated by MM. Kitasato, D. Sanchez-Toledo, Veillon, and others. I have undertaken the study of the diffusion of the tetanic poison in the body, from the scientific standpoint, with the following results: The toxine which I employed was obtained from a pure culture of tetanus given me by M. Sanchez-Toledo, and which cultivated in bouillon, in the absence of air, was maintained at a temperature of 38° (100.4° F.) for nineteen days, and was then filtered through a porcelain filter. Control cultures made with the filtrate from the bouillon, and in gelatine, showed that the filter did not allow the passage of any bacilli; moreover, microscopic examination at the points where the injections of the filtered liquid were made, always showed the absence of the tetanus bacillus.

The experiments were made on guinea pigs and mice; the guinea pigs were used for the direct injection of the toxine obtained from the cultures; the mice were employed to determine the toxicity of the different organs of the guinea pigs injected with the toxine.

In the preliminary experiments I sought first to ascertain the effects of the liquid which I employed. One drop of toxine injected under the skin of the thigh of a guinea pig caused tetanus at the end of twelve hours, and death in twenty-four hours. One-twentieth of a drop produced in mice all the symptoms of the disease in eighteen hours, and death in thirty-eight hours.

The experiments were divided into these series, with the object of determining the toxicity of the different organs of the guinea pig:

1. At the moment of the appearance of the first symptoms of tetanus;
2. After the generalization of these symptoms;
3. After the death of the guinea pig.

In the first series of experiments I injected seven drops of toxine under the skin in the sacral region of the guinea pig. As soon as the first symptoms of tetanus were produced (contractions of the posterior members), I killed the animal by section of the carotid. The blood obtained was injected in different quantities under the skin of the mice. The following organs: kidneys, liver, spleen, lungs, spinal cord, muscles of the region where the injection had been made, and muscles of the thigh, were removed with suitable precautions as to cleanliness, and in nearly equal weights. Each of these organs was finely triturated with a given quantity of physiological solution of sodium chloride. Then the effects of the emulsions of each of these organs on mice, were studied.

The symptoms of tetanus and death were produced uniformly in the mice who had received under the skin fifteen or more drops of blood, and also in those who had been inoculated with the emulsion of the muscles from the region of injection. The other mice presented no symptoms of tetanus.

In the second series, I killed the guinea pig after the development of all the symptoms of tetanus, that is to say at the time when the convulsions had become generalized. One cubic centimeter of blood, and one-half cubic centimeter of the emulsion of a small portion of the liver, produced tetanus, leading to the death of the mice at the end of 48 hours, with all the symptoms of the disease.

The emulsions prepared from the other organs and tissues produced no effect, except that from the muscles of the region injected, which always gave positive results.

Finally, in the third series of experiments, where I awaited the death of the guinea pigs before injecting the mice with emulsions of the organs, of the blood, and of clots found in the heart, I found that the liver only produced tetanus.

The phenomena are somewhat modified if the guinea pigs be injected with larger quantities of the filtrate from the cultures, 1.5 c.c. for example.

In the first series, the results were the same; but in the second and third series, tetanus was produced not only by the liver, and by the muscles of the injected part, but also by the spleen, the lung and the kidney. While the mice injected with the liver emulsion presented symptoms of tetanus in twenty-four hours, and died at the end of thirty-six hours, those injected with other organs, presented the characteristic contractions only at the end of forty-eight hours.

Injections made with urine and the spinal cord, always gave negative results.

The following conclusions I believe to be justifiably drawn from the foregoing facts:

1. The absorption of the toxine of tetanus is made by the blood.

2. The lungs, spleen, kidney, but principally the liver, withdraw from the blood the poisonous principle, and retain it.

3. The toxine is not eliminated to any appreciable extent by the urine.

4. Notwithstanding the striking predominence of neuro-muscular phenomena in tetanus, the presence of the toxine in nervous and muscular tissue cannot be shown; all the experiments made with these tissues gave negative results.—*La Semaine Médicale.*

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BY-LAW IV.—THE PUBLICATION OF PAPERS AND REPORTS.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

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LONDON OFFICE, 57 AND 59 LUDGATE HILL.

SATURDAY, AUGUST 1, 1891.

THE SPECIFIC GRAVITY OF HUMAN BLOOD.

Since the discovery of the blood corpuscle and the invention of the compound microscope, the attention of hæmatologists has been almost wholly directed to a study of the formed elements of the blood, while its general physical properties and plastic elements have been largely neglected. Especially has this been true of the pathological relations of the blood; a brief reference to our standard works on pathology will show how infrequent are references to changes in the physical properties of the blood, and what is then said upon the subject is mostly confined to the varying phenomena displayed by coagulation. In part this defect has been due to technical difficulties and to the small quantity of blood available for clinical examination.

In 1884, ROY (*Journal of Physiology*) studied the specific gravity of the blood after a method devised by myself, and applicable to small quantities of blood. The process was extremely simple, consisting in the preparation of solutions of a neutral salt of varying specific gravity. A small mass of coagulated blood was then thrown successively into each jar until a point was reached when the blood would neither float nor sink. It is apparent that this method was tiresome and inaccurate, especially was the latter true in cases where the normal coagulating power of the blood was impaired.

SCHMALTZ (*Deutsches Archiv. für Klin. Med.*) has described an instrument that is much more convenient, and with which exact results are attained with a small quantity of blood. It consists essentially of a small glass tube 12 c.m. long, ending in a capillary projection at both ends. This is carefully weighed on a delicate balance, it is then filled with distilled water and weighed, and lastly with the blood to be examined. From the differences in these figures the specific gravity may be readily calculated.

Recently DR. ERICH PEIPER (*Centralblatt für Klin. Med.*, March, 1891), has contributed an exceedingly interesting series of studies of the specific gravity of blood, after the method of SCHMALTZ. The blood of forty-nine healthy persons was examined, of these twenty-five were adult men, thirteen were adult women, eight were boys and three girls. In adults the specific gravity presented a range of from 1045 to 1066, the average for men being 1055, and for women, 1053. The average for the children being 1052 and 1050 respectively.

The examination of the blood in 10 cases of anæmia and chlorosis showed a distinct decrease in the specific gravity, the variation being from 1030 to 1051, and the average 1042.

In most cases attended by asthenia and the development of cachexia such as phthisis, carcinoma, chronic gastritis and leukœmia, a marked diminution in the specific gravity was found. In six cases of advanced phthisis an average of 1042 was noted, while in five cases of beginning phthisis, the figures were normal, 1055.

Of marked interest is the enormous lessening of the specific gravity in cases of nephritis. A boy ten years of age with parenchymatous nephritis, showed only 1023, after four weeks and marked improvement in the disease, the figures rose to 1054. In two other cases of acute nephritis, a specific gravity of 1030 and 1033 was found. In cases of recent acute nephritis, the figures were not materially lessened.

In cases of heart and lung troubles that were accompanied by cyanosis, bronchitis, fatty heart, emphysema and valvular lesions, a marked increase in the specific gravity of the blood was

noted; the same was found to be true in febrile conditions, while in sub-acute and chronic rheumatism and diabetes but little change was observed.

We feel that the interest and importance of these observations merit special mention, and we hope that further studies will be made of this subject. It is perhaps too much to hope that these methods will be widely used in practice, as but very few physicians will have the time and patience to struggle with the technical difficulties; we can, however, look to our hospitals, with their well equipped laboratories, for a marked advance in our knowledge of the plastic elements of the blood, and a corresponding advance in our grasp of diseased processes.

MALPRACTICE.—DR. PARKER VINDICATED.

The Appellate Court of Illinois has just affirmed the decision of the Cook County Circuit Court in favor of the defendant in the case of EDW. C. SIMS *vs.* ANDREW H. PARKER. The plaintiff Sims, who is a mechanical engineer, doing heavy work, had been wearing, upon a physician's advice, a truss on the left side as a preventive for hernia. This was prescribed because of a pain which he felt in the left inguinal region in 1881. In March, 1888, he applied to DR. PARKER, who is a dealer in trusses, for relief from a similar pain on the right side. On examination DR. PARKER found an inguinal swelling which he pronounced a hernia, and fitted Sims with a double truss. From the beginning SIMS complained of the pain of the truss, but continued to wear it for about a month, when he became feverish and went to bed. He was confined to his bed about three weeks, at the end of which time the inguinal swelling had become as large as an egg, and in three weeks more had developed into an abscess seven inches long, the contents of which were evacuated by his attending physician, Dr. Snyder. Subsequently another abscess formed.

The contention of the plaintiff was that the truss had been improperly applied, and had produced the abscess. DR. SNYDER, who attended SIMS, testified that there was no pus, and no abscess prior to May 23, that is, two months after the truss was first applied. When pressed to give as his opinion that the truss had caused the abscess, he was of course unable to do so. DR. HENRY HOOPER, who saw the patient in consultation with DR. SNYDER, May 23, testified that he found a large internal ring, but no hernia, and was unable to say whether a hernia had ever existed. In his defense DR. PARKER introduced many of the most prominent physicians and surgeons of Chicago, who testified to his great skill and ability as an adjuster of trusses, and to the impossibility of a truss producing an abscess. The gentlemen who testified in DR. PARKER'S behalf were DRS. A. J. BAXTER, MILTON JAY, RANSOM DEXTER, F. A. HUDSON, R. W. ISHAM, GEO. T. SPEARS, E. S. CROSS, N. S. DAVIS, J. R. MCCOLLOUGH, and ALLEN W. GRAY.

DR. PARKER testified that he had been engaged in the business of making, adjusting and selling trusses, since 1861.

The trial court took the case from the jury and decided in favor of the defendant on the ground that there had been no evidence introduced to show that the defendant was negligent or unskilful in his diagnosis or treatment. This action the Appellate Court approved.

The decision of the Appellate Court is of so much interest to the profession generally, that we publish it in full elsewhere in this issue of THE JOURNAL.

The decision indicates that a long established reputation, and the favorable consideration of the profession are not to be lightly overthrown.

The great importance of the decision to the profession we take it, is its emphasis of the doctrine that a mistake in diagnosis or an error in treatment is not sufficient to uphold a suit for malpractice. We are all human and must and do make mistakes in diagnosis, and in treatment. The complicated and incomplete data upon which physicians must base their judgments, make mistakes inevitable. No one but the charlatan is always right. But for negligence, and lack of average skill we may justly be held responsible, for these are errors which it is within the power of every qualified practitioner to avoid.

The profession, as well as DR. PARKER, is to be congratulated on the outcome of this case. But congratulations will not remunerate DR. PARKER for the unjust expenses to which he has been put, or for the worry and anxiety which he has had to undergo, nor for the actual although unjust, damage to his reputation, which every

professional man must suffer who is subjected to a malpractice suit. It is this last feature which makes it just to compel the plaintiff in a proposed malpractice suit, as is done in some States, to furnish bond to make good any damage which he may do the defendant in case his suit miscarries. In a case of real malpractice such provision would work no harm to the plaintiff, but it would prevent the filing of suits for blackmail or revenge, as is now so frequently done. It seems a little unjust to the medical mind that a physician must give bond before he attaches the property of a debtor, but that that debtor may turn around and attach the physician's reputation by a malpractice suit, in the most summary manner imaginable.

THE POISON OF TETANUS.

Last week we reviewed the etiology of tetanus, calling attention to the principal features of the bacteriology and chemistry of this disease, and particularly to the recent work which SANCHEZ-TOLEDO reported to the Société de Biologie. At the next meeting of this Society, June 27, 1891, CAMARA PESTANA reported the results of his very ingenious experiments relating to the chemistry of tetanus. A translation of his paper, as it appears in the report of the Society's proceedings in *La Semaine Médicale* of July 1, 1891, we present to our readers this week (see page 192), bringing the work on the etiology of tetanus up to date. Tetanus is particularly interesting, because the chain of events between the bacillus and the disease is here more fully revealed than in the case of any other disease. We do not mean to assert that the bacillus of NICOLAIER has been shown to be the cause, and the only cause of tetanus, any more certainly than any other germ is shown to be the cause of a certain disease, for such is not the case. The right of KOCH'S bacillus to the name bacillus tuberculosis, is established much more satisfactorily than the right of NICOLAIER'S bacillus to be called the tetanus bacillus. But the means by which the bacillus tuberculosis works is not known. Its chemistry yet remains to be revealed. Some of the chemical products of microörganisms which will produce diarrhœa, are known, but the bacteriology of the summer diarrhœas of infancy, is still in a very tangled state. In the sense here indicated, it may be asserted that the scientific completeness of the etiology of tetanus is exceptional.

PESTANA'S paper, however, is of wider interest than the particular subject of which it treats. His experiments point out a convenient means of recognizing the distribution of the poison in a poisoned animal, when satisfactory chemical tests for the particular poison are unknown or not available. His experiments emphasize the importance of that function of the liver which consists in the withdrawal from the blood of poisons, and their destruction. His work also indicates that there is but little tendency on the part of the tetanic poison to escape by way of the kidneys. We hope that his work may be carried further to determine, if possible, the particular eliminative channel through which the tetanic poison most readily finds exit, or how its toxic effects are most certainly reduced within the body. We recently intimated in these pages that it would be of clinical importance to determine through what avenues given poisons might best be eliminated from the body. PESTANA'S work gives a method by which such data may be experimentally determined.

PURE CULTURES.

By a pure culture is generally understood one which contains but one form of life, a single definite microörganism. This use of the term "pure culture" is justifiable so long as the use which is made of the culture is only morphological. Pure cultures of this type answer all requirements for the classification of microörganisms, for their morphological study. They might with propriety be termed "morphologically pure cultures." The absence of the limiting word, however, has lead to an improper idea of the purity of these cultures, and to a use of them for chemical purposes that is not strictly justifiable. Since the time when BRIEGER sewed such morphologically pure cultures in various media, and extracted therefrom the ptomaines formed, it has become customary to form similar cultures with pathogenic germs and to extract from them the poisons formed, so far, ptomaines or alkaloids, and toxalbumins, and to attribute the poisons so obtained to the biological activity of the germs. In the main, no doubt this conclusion is correct. But it is not necessarily correct.

The experiments of VAILLARD and VINCENT

with the tetanus bacillus referred to last week led them to believe that this bacillus formed an enzyme or unorganized ferment. Whether this be true or not, there can be but little doubt but that some microörganisms do produce such enzymes or soluble ferments. We do not wish to draw any hairsplitting distinctions between a germ and its enzyme, being willing to recognize that the chemical products of the enzyme are the chemical products of the biological activity of the germ. But herein lies the difficulty. The mechanical methods in vogue of separating germs from each other, and securing morphologically pure cultures of individual microörganisms, afford no guarantee that there has not been carried along with one germ, some of the enzyme of another to contaminate the resulting culture. A culture then may be pure, morphologically, but at the same time be contaminated with the enzyme of another germ. It is not a chemically pure culture.

It is true that an enzyme can not multiply while the organized ferment, the germ, can, so that in succeeding cultures, absolute purity may be obtained. But the infinitesimal amount of an enzyme which is necessary to produce a fermentation, and the uncertainty which attends the determination of its presence or absence in cultures prepared in the ordinary way, must necessarily throw a cloud over chemical deductions made from such cultures.

At least two ways are open to prepare cultures free from the enzymes of other germs.

If a culture be placed in a porcelain filter it may be washed with as much water under pressure as may be necessary to thoroughly cleanse it. The water will dissolve all enzymes and carry them through the filter, while the bacilli themselves remain.

So far as known all enzymes are chemically related to the proteids, at least they are rendered inert by a temperature a little short of the boiling point of water. Adult bacilli are likewise destroyed by a like temperature, but spores are not. So that with all sporulating microörganisms, heat could be used to destroy the enzymes and adult bacilli, and leave the spores to develop into cultures which would be pure in reality.

It is therefore urged that all cultures whose chemical products are to be investigated, should first be rendered pure, chemically as well as morphologically.

THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

In no other direction is the activity of thought and observation among medical men so perceptible as in the growth of interest in their societies. Last week it was our sincere pleasure to direct attention to the meeting next month in Washington of the Congress of American Physicians and Surgeons. Only a month later, in October, will be convened in St. Louis the Mississippi Valley Medical Association. The former is a gathering of specialists, the latter is distinctively a society of general practitioners.

Politicians and political economists often refer to our agricultural brethren as constituting the bone and sinew of our country, so we may without offense speak of the general practitioners of medicine as constituting the backbone, ribs and bosom of our art. They are the all-round men, who are called upon at all hours and seasons, to skilfully treat an inflamed corn, a flooding uterus, a fractured skull, or any of the other ills that afflict humanity—and rarely indeed is the record made, that they were not equal to the occasion.

These are the men who will gather at the Pickwick Theatre in St. Louis, on the morning of October 14, and continue in session until the close of the afternoon of the 16th. Nor will the general practitioners be allowed to become lonesome or to absorb all the good things of the occasion, for there is not a specialist within a thousand miles of St. Louis who is not perfectly familiar with the multitudinous advantages that just roll in upon him, through an attendance at the annual meetings of the Mississippi Valley Medical Association, and—he'll be there.

This year the President of the Mississippi Valley Medical Association is Dr. C. H. Hughes. The hundreds of physicians in the Valley who know Dr. Hughes will every one of them go to this meeting, that is a foregone conclusion, and the other hundreds who don't know him should be advised, and advised strongly, to go and make his acquaintance. Dr. I. N. Love is chairman of the Committee of Arrangements. This announcement means that every detail for the accommodation and entertainment of the members will be amply—fully provided for. There will be no slips or unforeseen contingencies. While the entire profession of St. Louis regard the Mis-

sissippi Valley Medical Association as very much their own organization.

The working methods of the Mississippi Valley Medical Association are of such a character as to commend it to every man who practices the healing art; and every physician who practices rational medicine and is in good standing with his professional neighbors, is eligible and welcome to its membership. The only fees are one dollar per year. The man who goes once, is forever after a confirmed *habitué*, besides that, he becomes a regular missionary in his zeal in endeavoring to get others to go to the next meeting.

Furthermore, an attendance on a meeting of the Mississippi Valley Medical Association is just about as good an outing as a practitioner of medicine can take at that particular time of the year.

Decision of the Appellate Court in the Case of Edward C. Sims vs. Andrew H. Parker, M.D.

Edward C. Sims, Appellant, vs. Andrew H. Parker, Appellee. Appeal from the Circuit Court of Cook County. Moran, P. J.

This action was brought to recover damages for an injury alleged by appellant to have been caused to him by a truss improperly applied and adjusted to him by appellee for the cure of hernia, when in fact, he had no hernia.

At the close of the evidence at the trial, the Court directed the jury to find a verdict for the defendant.

Plaintiff had for some years worn a truss on one side, and in March, 1888, feeling certain pains, he went to defendant's place of business, and told his symptoms, and afterwards was examined by defendant, who told him that he was ruptured. Thereupon plaintiff purchased a truss from defendant, and had him adjust it to his person.

After the truss was put on plaintiff suffered great pain, and went back to defendant several times, complaining of the pressure of the truss, and plaintiff readjusted the truss and told him it was necessary to have pressure in order to effect a cure of the alleged hernia. After wearing the truss about two weeks, plaintiff became sick, and an abscess appeared at the point where the bulb of the truss had pressed.

The evidence shows that the plaintiff suffered great pain from the abscess, and was sick for a long time, and his contention is, that the abscess was the result of the too great pressure of the truss produced by the improper adjustment thereof to his body. It is shown that plaintiff was very fleshy; that at the point where he located the pain which he complained of, when he first went to defendant, there was a slight swelling or protuberance, and that over this defendant adjusted the bulb of the truss. When the truss was taken off at the end of two weeks this swelling had increased, and as before said, developed into an abscess. The physician who attended plaintiff and who was a witness on trial, was unable to say whether there was an incipient abscess at the time the truss was first adjusted, or whether the abscess was produced by the pressure of the truss.

The fair result of the evidence of the experts sworn is, that there was in fact no rupture on the person of plaintiff, but it is also proven that it is very difficult to tell, with certainty, in many instances, whether in fact there is hernia or not, particularly in the case of fleshy persons.

Defendent introduced a number of leading surgeons and physicians of the city, who testified to the reputation and skill of defendant in treating hernia, and in fitting and adjusting trusses.

While there is evidence tending slightly to support the contention that the abscess may have been produced by the pressure of the truss, there is absolutely no evidence that defendant was negligent or unskilful in his diagnosis or in fitting the truss.

Proof that he was mistaken as to the existence of a rupture, or that the abscess was caused by the pressure of the truss, was not enough to entitle plaintiff to a verdict.

Proof of a bad result or of a mishap is of itself no evidence of negligence or lack of skill. The defendant is qualified to practice medicine and surgery, and the evidence of the experts in his profession shows him competent and skilful. Before a recovery could be had against him, it must be shown that his treatment was improper or negligent, not merely that he was mistaken, or that his treatment resulted injuriously to plaintiff. A physician or surgeon, or one who holds himself out as such, is only bound to exercise ordinary skill and care in the treatment of a given case, and in order to hold him liable, it must be shown that he failed to exercise such skill or care.

McNevins vs. Lowe, 40 Ill., 209.

The jury cannot draw the conclusion of unskilfulness from proof of what the result of the treatment was, but that the treatment was improper must be shown by evidence.

"No presumption of the absence of proper skill and attention arises from the mere fact that the patient does not recover, or that a cure was not effected."

Haire vs. Reese, 7 Philadelphia: R., 138.

No man, skilled or unskilled, undertakes that he shall be successful; "he undertakes for good faith and integrity, but not for infallibility, and he is liable to his employer for negligence, bad faith or dishonesty, but not for lapses consequent upon mere errors of judgment."

Cooley on Torts, 777.

Holtzman vs. Hoy, 118 Ill., 534.

Proof of the lack of skill or negligence on the defendant's part—a necessary element in plaintiff's case—being entirely lacking, the Court properly instructed the jury to find for the defendant.

The judgment must be affirmed.—*Affirmed.*

In Testimony Whereof, I have set my hand and affixed the seal of the said Appellate Court, at Chicago, this twenty fifth day of July, in the year of our Lord one thousand eight hundred and ninety-one.

THOMAS G. MCELLIGOTT,
Clerk of the Appellate Court of the First District.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

A Chinaman, named Hop Sing, presenting a well marked case of leprosy of the tubercular variety, who has for some time past been running a laundry on the east side of the city, was recently discovered by the Board of Health, and when the announcement was made of the nature of his disease there was considerable consternation in the neighborhood. It seems that the man came to New York about a year and a half ago, and it is probable that he was then already affected. When his fellow countrymen living in the Chinese colony in Mott street, found that he was suffering from leprosy, they raised $200 to send him back to China, but he simply removed to Newark, New Jersey, and with the money opened a laundry there in connection with another leprous Chinaman. Eight months ago, however, he returned to New York and established himself in the location mentioned.

As soon as the existence of the case became known the Health Department made an investigation, and Dr. Dillingham, of the Bureau of Contagious Diseases, pronounced it one of undoubted leprosy. For a few days, however, nothing was done in regard to it, as the danger of infection was not regarded as urgent. On the return of Dr. Cyrus Edson, Chief of the Bureau, who had been absent from the city, the patient was removed to Charity Hospital on Blackwell's Island. In regard to leprosy in this city Dr. Henry G. Piffard, the well-known dermatologist, some time ago made an interesting report from which the following is an extract:

"During the past twenty-five years there have been probably fifty or sixty cases in the city of New York. Of these cases I have personally examined probably twenty five or thirty. With but one exception these cases came from abroad, that is from countries where leprosy is endemic and prevalent. There is at the present time, I believe, a case in the Charity Hospital which has been there for years, but no cases have arisen in this city by contact with any of the afflicted, as far as known to me. In view of the fact that there are rarely more than two or three cases of leprosy in the city at the same time, and the fact that the liability to infection is so slight, it seems to me that it would be hardly worth while for the Health Department at the present time to exercise any supervision over lepers other than to keep a record of their location and surroundings as carefully as possible."

Since 1866, five deaths from leprosy have been reported in New York: one in 1873, one in 1875, one in 1879, one in 1881, and one in 1884.

The fact of Hop Sing's case having been made public naturally directed attention to that of his fellow countryman in New Jersey, with whom he became temporarily associated when he left this city. Dr. Saltanstall, Inspecter of the Hudson County Board of Health, after carefully examining the man has pronounced his disease leprosy, and has so reported to the Board.

At the Maternity Hospital on Blackwell's Island, an "incubation" for the preservation of premature and other infants of low vitality was lately received from Paris, and the first case, a premature child weighing only four and a half pounds, has been very successfully "hatched out" in it. It is announced, however, that at the Woman's Hospital in Philadelphia, two of these incubators have been in use for the last three years, and that during the past year they have been employed in no less than fifty cases, all of which are now living. One of these is said to be quite remarkable, it being that of a six months child. The apparatus, which may not be familiar to all the readers of THE JOURNAL, consists of a ventilated wooden box, containing a perforated mattress, supported by iron rods, on which the infant, wrapped in cotton, is laid, the required heat being furnished by means of hot water bottles placed under the mattress. Daily inunctions with codliver oil are usually employed instead of bathing with water.

By the will of the late Hector C. Havemeyer, who died in 1880, $200,000 was bequeathed to various charitable institutions in this city; the selection of these being left to his mother. She has now announced those which she has chosen, and among them are the Manhattan Eye and Ear Hospital, which is to receive $35,000; the New York Eye and Ear Infirmary, which gets $10,000, the Presbyterian Hospital, $5,000, and the New York Post-Graduate Medical School and Hospital, which also gets $5,000.

New York has just lost two of her most venerable and highly respected physicians. One of them, Dr. John Ledyard Vandervort, who for more than fifty years was the librarian of the famous medical library of the New York Hospital, having been appointed to the position in 1837. At the time of his death, he was in the 83d year of his age, but for about twelve years he had not been in active practice. He was an old time New Yorker, having been born and spent all his life in this city. He was a graduate of Columbia College, and of the College of Physicians and Surgeons.

The other was Dr. Orid P. Wells, who died at the ripe age of 86. He was born in Berkshire County, Massachusetts, but came to New York when quite a young man to practice. In the cholera epidemic of 1832, he did such good work that when the epidemic of 1849 occurred, he was placed in charge of the cholera hospital. Prior to the establishment of the Board of Health he was also City Physician for a time. During almost his entire residence in this city, his home was on West 20th street, and it is said that when he first occupied it there was no brick house except his own north of Washington Square. His funeral services were held at the neighboring church of St. Peter's, where for many years he was a devout worshiper. Dr. Wells was one of the founders of the New York Academy of Medicine, and of late years had been an honored member of the County Association. P. B. P.

Dear Sir:—At bottom of page 21, of THE JOURNAL of July 4, is an item headed "The oldest and largest Medical Society in the United States." The Massachusetts Medical Society, founded in 1781, and now having about 1800 members, might perhaps come nearer to that mark than the Society named in the item.

Respectfully, J. L. WILLIAMS.

Boston, July 7, 1891.

BOOK REVIEWS.

THE FIRE PROTECTION OF HOSPITALS FOR THE INSANE. By L. H. PRINCE, M.D. Chicago: C. H. BLAKELY & Co.

Nothing can be more appalling than a fire in a crowded hospital, filled with the sick or insane. Abundant experience in the past has shown the frequency of these accidents and the inadequate means at hand for dealing with them. We feel sure that the day is not distant when the herding of large numbers of sick and helpless people, in non-fire-proof structures will be considered little less than criminal. Until that time comes every possible precaution should be taken by the organization of a special fire brigade in every institution for the sick and defective classes. This brigade should not only be thoroughly drilled in the most approved methods of fighting fires, but a life saving corps should form part of such fire service.

It is to the solution of this problem that this small work is addressed. A summary of the chapter headings will give an idea of its scope; the prevention of fire, fire extinguishing apparatus, the fire alarm, the fire brigade, drilling of the brigade, the fighting of fire.

While, as the author says, much more is to be learned in such matters from experience and practice than by the mere reading of books, yet the work contains much that will be invaluable in organizing the fire service of any public institution. The writer has developed his ideas by practical experience, having organized the fire service at the Illinois Eastern Hospital for the Insane, one of the best, if not the best in this country. A copy of this work should be in every public institution for the defective classes.

MISCELLANY.

DR. J. P. CROZER GRIFFITH, Professor of Clinical Medicine in the Philadelphia Polyclinic, has also been elected Clinical Professor of the Diseases of Children in the University of Pennsylvania.

HARVARD MEDICAL SCHOOL FELLOWSHIPS.—Three scholarships of $5,000 each have been established through the gift of William S. Bullard.

DR. NATHAN BOZEMAN—The University of Alabama, at its recent commencement occasion, conferred the degree of LL.D. on this well-known surgeon.

THE UNIVERSITY OF VERMONT.—Dr. Condict W. Cutler, of New York, has been appointed professor of skin and venereal diseases, to succeed Dr. R. W. Taylor, who has resigned.

DR. W. W. KEEN, of Jefferson Medical College, recently received the honorary degree of LL.D. from Brown University.

AMERICAN DERMATOLOGICAL ASSOCIATION.—The following additional papers will be read at the next annual meeting of this Association, to be held in Washington, commencing September 22:

"The Hypodermic Use of Hydrargyrum Formamidatum in Syphilis," by Dr. R. B. Morison.

"Retarded Hereditary Syphilis," by Dr. R. B. Morison.

"Epilation; its Range of Usefulness as a Dermatotherapeutic Measure," by Dr. J. Zeisler.

ILLINOIS STATE DENTAL SOCIETY.—At the twenty-seventh annual meeting of the Illinois State Dental Society, held at Bloomington, May 12 to 15, 1891, the following officers were elected for the ensuing year: W. H. Taggart, Freeport, President; Garrett Newkirk, Chicago, Vice-President; Louis Ottofy, Chicago, Secretary; W. A. Stevens, Chicago, Treasurer; F. H. McIntosh, Bloomington, Librarian.

The next meeting will be held in Springfield, beginning on the second Tuesday in May, 1892.

LOUIS OTTOFY, Secretary,
70 Dearborn St., Chicago, Ill.

DR. DANIEL G. BRINTON.—Dr. Brinton, so long known for his surgical work, and his former connection with the *Philadelphia Medical and Surgical Reporter*, has received the degree of LL.D from the Jefferson Medical College, in recognition of his researches in anthropology and ethnology.

ST. LOUIS MEDICAL COLLEGE has been made the Medical Department of Washington University.

PHILADELPHIA'S POLYCLINIC.—The Board of Trustees of the Philadelphia Polyclinic and College for Graduates in Medicine have created a third Chair of Diseases of the Eye, and, upon the unanimous nomination of the Faculty, have elected Prof. George de Schweinitz, M.D., to fill the position.

UNIVERSITY OF MICHIGAN.—Dr. Victor C. Vaughan is made Dean of the Faculty of Medicine in succession to Dr. Ford who has resigned.

MILITARY ORDER OF SURGEONS OF NEW JERSEY.—At the regular meeting of the Military Order of Surgeons of New Jersey, held at Sea Girt, N. J., June 15, the following officers were elected: President—Lieut.-Col. A. K. Baldwin, Surgeon, First Brigade. First Vice President—Lieut.-Col. Franklin Gauntt, Surgeon, Second Brigade. Second Vice-President—Col. George W. Terriberry, Division Surgeon. Secretary—Major E. L. B. Godfrey, Sixth Regiment. Treasurer—Major H. C. H. Herold, Fifth Regiment. The following were elected honorary members of the Order: Surgeon-General Jos. D. Bryan, New York; Surgeon-General Nicholas Senn, Illinois; Major Alfred A. Woodhull, Surgeon U. S. A.; Major John H. Janeway, Surgeon U. S. A.

THE STANDARD DICTIONARY.—From an inspection of advanced sheets, we are led to believe this will be one of the most valuable works ever offered to English-speaking people. It is worthy of the highest commendation.

ASSOCIATION OF AMERICAN PHYSICIANS.—The sixth annual meeting of this Association will be held in connection with the second Congress of American Physicians and Surgeons, at Washington, D. C., September 22, 23, 24 and 25, 1891.

Tuesday, September 22. Session of the Association, 10 A.M.

1. President's Address, William Pepper, of Philadelphia.

2. General Business, Reports, etc.

3. Discussion on the Treatment of Visceral Tuberculosis by Koch's Method. Reports by F. P. Kinnicutt, of New York; Harold C. Ernst, of Boston; William Osler, of Baltimore; Drs. Musser and Griffith, of Philadelphia.

4. The Climate of Southern California for Respiratory Diseases. A Preliminary Paper, Norman Bridge, of Los Angeles.

5. Experimental Studies on the Causes of the Localization of Pulmonary Phthisis and certain other Infectious Diseases in the Lungs, J. W. Roosevelt, of New York.

Session of the Congress, 3 P.M. Conditions Underlying the Infection of Wounds, including a Discussion of Disinfection with reference to the Treatment of Wounds, of the Relation of Bacteria to Suppuration, of the Resistance of Tissues to the Multiplication of Bacteria, and of the Effects of Antiseptic Agents on Wounds.

Referee—Dr. William H. Welch, of Baltimore, Professor of Pathology, in Johns Hopkins University.

Co-Referee—Dr. Roswell Park, of Buffalo, Professor of Surgery in the Buffalo Medical College.

The discussion will be adjourned, if necessary, until Friday afternoon.

Wednesday, September 23. Session of the Association 10 A.M.

6. Discussion on the Remote Results of the Removal of the Ovaries and Tubes.

Referee—William T. Lusk, New York.

Co-Referee—Wharton Sinkler, of Philadelphia.

7. Nerve Stretching in Inveterate Cases of Trigeminal Neuralgia, James Stewart, of Montreal.

8. On the Diseases of the Kidney, popularly called "Bright's Disease," Francis Delafield, of New York.

9. Note on the Recognition of Certain Cases of Epilepsy, accompanied by Albuminuria, which might be mistaken for Cases of Uræmic Convulsions, James Tyson, of Philadelphia.

10. Bradycardia in Acute Articular Rheumatism, I. E. Atkinson, of Baltimore.

Session of the Congress, 3 P.M. The Late Manifestations of Syphilis.

Referee—Dr. Phineas S. Conner, of Cincinnati, Professor of Surgery in the Medical College of Ohio.

Co-Referee—Dr. Abner Post, of Boston, Clinical Instructor in Syphilis in Harvard University.

The President's Address will be delivered in the Lecture Hall of the National Museum at 8 P.M., and will be followed by the Reception of the President from 9:30 to 12 P.M.

Thursday, September 24. Session of the Association, 10 A.M.

11. Discussion on the Relations between Arterial Disease and Visceral Changes.

Referee—George L. Peabody, of New York.

Co-Referee—W. T. Councilman, of Baltimore.

12. Intestinal Perforation in Typhoid Fever, R. H. Fitz, of Boston.

13. The Relation of Drinking-Water to Disease, Henry P. Walcott, of Cambridge.

14. A Contribution to the Pathology of Pernicious Anæmia, J. P. Crozer Griffith and Charles W. Burr, of Philadelphia.

15. On Changes in the Red Blood Corpuscles in the Pernicious Anæmia of Texas Cattle Fever (by invitation), Theobald Smith, of Washington.

Session of the Congress, 3 P.M.

Fibroid Processes (Chronic Interstitial Inflammation Scleroses): their Pathology and Etiology, with Special Reference to the Influence of Diathesis and Heredity.

Referee—Dr. A. L. Loomis, of New York City, Professor of Pathology and the Practice of Medicine in the University of the City of New York.

Co-Referee—Dr. William Osler, of Baltimore, Professor of Medicine in Johns Hopkins University.

Dinner, conjointly with the American Surgical Association, in honor of our Foreign Guests, at the Arlington Hotel, at 8 P.M.

Friday, September 25. Session of the Association, 10 A.M.

16. The Condition and Prospects of the Library of the Surgeon-General's Office, and its Index Catalogue, John S. Billings, of Washington.

17. Sequel to a Case of Slow Pulse (Purdy), D. W. Prentiss, of Washington.

Report of Autopsy, Robert T. Edes, of Washington.

18. Grave Forms of Purpura Hæmorrhagica, J. H. Musser, of Philadelphia.

19. Pathological Histology of Acute and Chronic Appendicitis, William F. Whitney, of Boston.

20. The Treatment of Typhoid Fever by Systematic Cold Bathing, James C. Wilson, of Philadelphia.

21. Concluding Business.

Session of the Congress, 3 P.M. If necessary, the discussion on the "Conditions Underlying the Infection of Wounds," etc., will be resumed.

General Information.—Drs. James G. Glover and William M. Ord, of London; Drs. McCall Anderson and W. T. Gairdner, of Glasgow; Dr. J. Battey Tuke, of Edinburgh; Professor Curschman, of Leipzig; Professor Kühne, of Heidelburg; and Dr. Löwenberg, of Paris, have already accepted the invitation of the Association to attend the Congress, and will be the guests of the Association, and will participate in the discussions of the papers read before it.

The Association will hold its meeting in Hall No. 1 of the Grand Army Building, 1412 and 1414 Pennsylvania Avenue; and in the Main Hall of the same building the meetings of the Congress will be held.

Members of this Association are *ipso facto* members of the Congress, and as such are expected to register. Parlors 1 and 2 in the Arlington Hotel will be provided for that purpose, from which the mail of the members and guests will be distributed, and at which the city residence of each member or guest can be ascertained. The registration fee is five dollars.

A copy of the transactions of the Congress will be sent to each person who may register; and only those who may register, invited guests, and ladies accompanying them, will be admitted to the Reception of the President.

Dr. Samuel C. Busey is the representative of this Association on the Committee of Arrangements, of which he is Chairman.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from July 18, 1891, to July 24, 1891.

Capt. Reuben L. Robertson, Asst. Surgeon U. S. A., ordered for duty to Ft. Niagara, N. Y., on the abandonment of Ft. Abraham Lincoln, N. Dak.

Asst. Surgeon William L. Kneedler, U. S. A., granted leave of absence for one month.

Surgeon Henry R. Tilton, U. S. A., granted leave of absence for two months on surgeon's certificate of disability.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending July 25, 1891.

Asst. Surgeon James G. Field, ordered to special duty in the Bureau of Medicine and Surgery.

Asst. Surgeon James S. Hope, ordered to the receiving ship "Franklin."

Asst. Surgeon Lewis Morris, ordered to the "Ajax" and other monitors, Richmond, Va.

Asst. Surgeon James F. Keeney, promoted to P. A. Surgeon.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Three Weeks Ending July 18, 1891.

Surgeon R. D. Murray, to proceed to Gulf Quarantine for temporary duty. July 1, 1891.

Surgeon H. W. Sawtelle, relieved from duty at Portland, Me., ordered to Boston, Mass. July 11, 1891.

Surgeon Fairfax Irwin, when relieved at Boston, Mass., to proceed to Buffalo, N. Y., for temporary duty. July 11, 1891.

P. A. Surgeon H. R. Carter, ordered to Washington, D. C., for temporary duty. July 2, 1891.

P. A. Surgeon C. T. Peckham, granted leave of absence for seven days. June 30, 1891.

P. A. Surgeon S. C. Devan, when relieved at Buffalo, N. Y., to proceed to Portland, Me., for duty. July 11, 1891.

P. A. Surgeon S. D. Brooks, granted leave of absence for thirty days. July 13, 1891.

P. A. Surgeon J. J. Kinyoun, granted leave of absence for thirty days. July 14. 1891.

Asst. Surgeon E. A. Houghton, to proceed to Cleveland, O., for temporary duty. July 8, 1891.